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THE CHANGING METROPOLITAN ECONOMY

PREPARED BY: POLICY DEVELOPMENT DIVISION
METROPOLITAN TORONTO PLANNING DEPARTMENT

METROPOLITAN PLAN REVIEW

The Municipality of Metropolitan Toronto

Metropolitan Plan Review

Report No. 2

THE CHANGING METROPOLITAN ECONOMY

A background document in the review of
"The Official Plan For The Urban Structure: Metropolitan Toronto"

Prepared by the Policy Development Division of the
Metropolitan Planning Department

1986

PREFACE

The Official Plan for the Municipality of Metropolitan Toronto, entitled "Official Plan For The Urban Structure: Metropolitan Toronto", was adopted and largely approved in 1980. The Plan applies to the Metropolitan Planning Area comprised of the Cities of Toronto, Etobicoke, York, North York and Scarborough and the Borough of East York. This area is illustrated on Figure 1.

In March 1986, the Metropolitan Council approved a program to review the Plan. That program has been published as "Report No. 1: Program", (April 1986, Metropolitan Toronto Planning Department) and copies are available from the Department.

The Metropolitan Plan Review will proceed by studying five major subject areas, namely:

- regional assumptions and the concept;
- housing and residential development;
- employment areas and activities;
- transportation; and,
- open space and environment.

Phase 1 of the review process, of which this study is a component, is the preparation and publication of a series of technical background and proposal papers covering the above five subject areas. Community response to those papers is an integral part of the Metropolitan Plan Review and is encouraged from all sectors and levels of the community. All responses will be considered in any subsequent policy reports recommending revision to existing policy.

The Changing Metropolitan Economy is a technical background report which is the first of a series of reports studying the subject area "employment and economic activities" in the Metropolitan Toronto Planning Area.

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THE CHANGING METROPOLITAN ECONOMY

EXECUTIVE SUMMARY

1.0 INTRODUCTION

Technological advances and global trends are transforming our economy. These changes have significant social and physical consequences for Metropolitan Toronto. In this highly volatile and competitive environment, Metro Toronto cannot take for granted continued growth and prosperity. We are confronted with new employment challenges and presented with powerful new opportunities. The current pace of change gives rise to an uncertain future which can be influenced by policy. The purpose of this report is to highlight some of the major technological changes and economic trends which are occurring and assess their implications on:

- the employment and economic structure of Metropolitan Toronto;
- the employment assumptions of the Metropolitan Official Plan; and
- Metropolitan planning policies related to the economic structure of the Metropolitan planning area.

The planning implications and employment assumptions arising from this report serve to provide a context and direction for other studies reviewing the policies of the Metropolitan Official Plan. In this regard the report is a common background document to the subsequent reports on the subject of "centres", "office development" and "industrial areas".

2.0 TECHNOLOGICAL INNOVATIONS

The rapid development and adoption of new technology is having a significant impact on our employment and economic structure. At the centre of the technological revolution is the micro chip. While the power of the chip has increased over a hundred times in the past decade, its cost has dropped a thousandfold thereby bringing the use of microelectronics into everyday life.

Microelectronics technology is being introduced into almost every economic activity from the office place and manufacturing plant to the retail shop and medical laboratory. The application of microelectronics technology to various economic activities is dramatically reducing the cost of producing goods and services and is fuelling the development of a set of other new technologies.

The adoption of new technology is leading to automation of the office involving word processing, data storage and manipulation and electronic mail leading to the creation of fully integrated work stations. The use of fibre optic networks and satellite systems enable the transmission of large volumes of voice, video and data communications at high speeds between companies throughout the world. In industry, the use of computer innovations in design and manufacturing and the introduction of robotics is accelerating the pace of automation of industry.

New technological advances and their applications have enormous implications for society resulting in major social and economic changes. The creation, processing and distribution of information is becoming more important as an economic activity and as a factor in production. It appears that in the new information society, the strategic resource in the production of wealth is knowledge.

The diffusion of new technology is changing traditional job patterns affecting both the amount and nature of employment. While it is evident that the adoption of new technologies has resulted in a net growth in employment, concerns arise as to whether in the future sufficient new jobs will be created to replace those that have been lost due to automation. Certain work tasks and occupations are being displaced or transformed and new ones are being created. However, the skills needed for the new jobs are often very different from those jobs that have been lost. A concern is that increasingly, the adoption of new technology is leading to a bipolarization of employment in either the highly skilled or low skilled jobs while those in the middle are declining. Workers will have to be trained to use the new processes and equipment and others will have to be retrained as their skills become obsolete.

3.0 ECONOMIC TRENDS

Trends in the national and provincial economies reflect the adoption of new technologies as well as changes in international trade and structural changes in the economy. The economy is becoming increasingly dominated by the service sector. In both Ontario and Canada the service sector employs the largest number of workers.

Canadian manufacturing industries are being caught between increased competitive pressures from lower cost producers in newly industrializing countries and more efficient producers in technologically advanced countries. Canada has lagged behind other major developed countries in the innovation and adoption of new technologies in manufacturing industries. Ontario's economy which has a high manufacturing component, is particularly vulnerable to growing competition from abroad. Industry needs to improve its efficiency and competitiveness in order to survive. In the future, high technology industries can be expected to become increasingly important to the economy.

Despite the shift to the service sector, it is evident that manufacturing is still important to the economy because of its high multiplier effect stimulating more growth in the rest of the economy than other types of activities. All levels of government, including Metro Toronto, have a role to play in preserving and promoting industry in which Canadian companies can maintain their competitive edge.

A review of recent employment trends indicates the following:

- firms with less than 20 employees provided over half of all new jobs;
- the adoption of new technology is having an impact on the economy and the employment pattern. In the absence of policies and programs to assist in adaptation, new technology has the potential to increase the incidence of unemployment, especially among young people and displaced workers; and
- part-time employment is growing as a proportion of total employment.

In the future, it appears that job creation will be concentrated in the service sector with a continued decline in manufacturing employment. Recent

projections for Ontario indicate that over the next decade the service sector will generate 80% of all new jobs with the community, business and personal service sector being the major contributor. Our future strength will be more dependent on increasing industrial competitiveness and expansion of trade in the service sector. We will probably have to emphasize product innovation and the production of complex goods requiring a high degree of flexibility and sophistication. In the service sector we will likely see a growth in exporting our advanced knowledge and expertise.

4.0 THE METROPOLITAN TORONTO AND REGIONAL ECONOMY

Metropolitan Toronto is a national diversified centre of advanced services. It is the economic heartland of the country acting as the financial, administrative and service centre of both Ontario and Canada as well as having a significant manufacturing sector. Metropolitan Toronto and the surrounding regional municipalities together form interdependent parts of an economic entity: the regional economy. Various parts of the regional economy exhibit differentiation of functions and areas of specialization. It is in this diversity that the strength of the regional economy lies. This provides the Region with a wide range of employment opportunities, economic stability during difficult economic cycles as well as a high level of growth and innovation which enables it to be responsive to economic changes.

Metropolitan Toronto's economy is increasingly moving towards specialized activities. This evolution is part of the larger restructuring of the national economy leading to the dominance of the service sector as well as high technology industries and is reflected in the Metropolitan employment structure. The service sector led by the community, business and personal service, finance and trade sectors have led employment growth in Metro. Currently, 76% of employment in Metropolitan Toronto is in the service sector of which office is the major employment category. Manufacturing is an important sector of the metropolitan economy but is experiencing a decline in employment.

Prospects for growth over the next 25 years to the year 2011 indicate a continued though slower rate of economic and employment growth. Within the

Toronto Region, it is projected that the rate of growth in the areas outside of Metro will outpace that of Metro itself. Slower rates of population growth coupled with an aging population are expected to result in a relatively stable employed labour force within Metro. The employed labour force in the surrounding regions, however, is projected to double.

Total employment in Metro is expected to grow by just over 300 000 jobs, more than three quarters of this accounted for by the office sector. Manufacturing employment will likely continue to decline while the strong growth of the service sector is expected to continue, particularly community, business and personal services. Total employment in Metropolitan Toronto is projected to be just under 1.5 million in the year 2011. The full effect of automation in the service sector is not yet known and will require monitoring of trends and review of employment projections.

TOTAL EMPLOYMENT BY MAJOR CATEGORY, 1985-2011, METROPOLITAN TORONTO

	1985		2011	
Office	495 520	41.8%	728 980	49.1%
Manufacturing/ Warehouse	257 390	21.7	229 720	15.5
Institutional	139 674	11.8	175 405	11.8
Retail	136 733	11.6	146 638	9.9
Service	128 445	10.9	185 976	12.5
Other	26 451	2.2	18 859	1.2
Total	1 184 213	100.0%	1 485 586	100.0%

Although manufacturing employment is projected to decline in the longer term, manufacturing will probably still provide a significant economic stimulus and the metropolitan community should continue to perform an important role as a centre for industry. Metro provides a location for innovation and creativity in such fields as manufacturing, communications, advertising, engineering and

medical research. Metropolitan Toronto is well positioned to capitalize on the shift to the service sector. The Region has a comparative advantage in attracting higher order services and research and development functions because of the high quality of Metro Toronto's environment including cultural and entertainment facilities and its educational and research institutions. Its role as a financial, business and administrative centre will likely continue to attract related business activities.

5.0 SOCIAL IMPLICATIONS

The diffusion of new technology and the changing economic structure are likely to result in significant social implications for Metropolitan Toronto. The potential for automation to reduce labour demand will likely lead to short-term transitional difficulties and possibly long term structural unemployment unless remedies are found. These employment changes may impact on particular groups such as young people or older displaced workers and possibly increase the incidence of poverty among these groups. Special policies and programs will be needed to address the needs of those groups affected by structural changes in the economy. Emphasis should be placed on education and retraining and better forecasting of skills needed to meet future employment opportunities. Metro Toronto is well suited to accommodate these changes due to its high level of educational institutions and the research and training they provide.

6.0 PLANNING IMPLICATIONS

The technological changes and economic trends that are occurring are likely to affect the pattern of development within Metropolitan Toronto. The following is a summary of the major planning implications.

Industrial

(1) The nature of industry in Metropolitan Toronto is changing as new industrial uses such as "high tech" research and development activities, computer services, retail-warehouses and data processing centres are developing in addition to traditional industrial uses. There is a need to

examine the definition of "industry" and permitted uses in industrial areas and identify lands where new kinds of economic activities may be permitted.

(2) The adoption of new technology can be expected to change the space demand within industrial development by increasing the need for office and other accessory space as a component of the industrial operation.

(3) With the adoption of the "Just-in-Time" delivery system in certain industries, accessibility between manufacturing companies and parts suppliers will become a significant locational factor. This system may place additional demands on the regional road system and may also decrease the need for warehouse space in some industries. The effect of the J.I.T. system on land development should be studied.

(4) The renovation and retrofitting of existing industrial buildings is likely to become more important as industrial buildings will increasingly have to accommodate complex telecommunications networks and computer systems. Obsolete buildings will likely undergo redevelopment.

(5) The demand for industrial space and land for routine standardized manufacturing uses will likely decline as firms using standard technologies increasingly shift production to lower-wage countries. Economic trends favour the growth of specialized production and high quality manufacturing in Metropolitan Toronto. New industries requiring large sites can be expected to locate in the surrounding regions.

(6) There will be a need to ensure the provision of smaller incubator type industrial space and policies to support the development of innovative firms.

Office

(7) Continued high growth in business services will increase the demand for additional office space in Metropolitan Toronto.

(8) The Central Area can be expected to continue as the pre-eminent office centre within Metropolitan Toronto serving not only the Toronto Region but also the national economy. The Central Area will continue to grow, attracting head offices and other higher-order functions. The growth rate could, however, slow down as employment growth moves from trade and finance to business services which are not as tied to a central location.

(9) The office floor space per worker in the Central Area has been increasing and will likely continue to increase due to the increased concentration of higher-order functions in the Central Area and the trend to automation of the workplace.

(10) There is likely to be a continuation of the growing functional split between the Central Area and suburban office centres with the Central Area experiencing a concentration of higher order functions. Suburban office centres can be expected to attract business services, some head offices and specialized functions, as well as an increasing level of routine office jobs. This implies a need to improve transportation facilities, the work environment and provide increased amenities in suburban office concentrations.

(11) In the future there may be a demand to review zoning by-laws to determine which employment uses can be carried out from the home without adverse impact on the residential neighbourhood.

(12) Telecommunications networks are expected to contribute to Metropolitan Toronto's economic growth. The development of these networks as an element in the Metropolitan infrastructure should be ensured.

(13) An increasing number of office buildings may require retrofitting to meet the demands for advanced communications systems. There is a need to study the extent to which office buildings in Metropolitan Toronto are able to facilitate the use of new computer and telecommunications technologies.

Government Services

(14) Employment in government services is expected to remain stable or decline slightly. Government office functions which do not require a central city location or which have daily contact with the public may locate new facilities in suburban centres or move out of Metropolitan Toronto.

Health and Social Services

(15) The Central Area of Toronto will continue to be the principal medical research and hospital centre. Additional specialized medical facilities may be expected to locate there. General health and social service facilities can be expected to locate in the outlying suburban region where large population growth is occurring.

Retail

(16) Continued growth of the retailing of food and beverage services will probably result in an increase in such facilities.

(17) New growth in regional shopping centres is likely to occur in the surrounding regions and no new development outside of Centres is anticipated in Metropolitan Toronto. However, existing shopping centres may require retrofitting to adapt to market shifts.

(18) There will likely be continued demand by retail-warehouse outlets and superstores to locate mainly in suburban areas on large sites having good transportation accessibility. This could result in continued pressure on industrial areas.

(19) There is a need to ensure the provision of a variety of retail and service amenities in the vicinity of significant employment concentrations, especially sub-centres and Office Parks.

Recreation and Tourism

(20) There is a need to provide increased and varied recreational facilities for the local population and tourists.

(21) Planning should continue to support opportunities to maximize the growth of the Metropolitan tourist industry including arts, trade shows, cultural facilities and major sports facilities. Civic design policies should be developed to improve the urban environment and support tourism.

7.0 EMPLOYMENT ASSUMPTIONS TO GUIDE PLANNING

Many of the assumptions on which the 1980 Metropolitan Official Plan were based appear to be still relevant to guide the future development of Metro. However, with the acceleration of the process of change, some assumptions should be modified and new ones considered. The following are revised economic and employment assumptions which could form the basis of planning for the long term future of Metropolitan Toronto.

New Technology

- The adoption of new technology will likely serve as a powerful driving force of change. It will probably result in continued changes to the employment pattern leading to major adjustments in the metropolitan economy. It will also influence the distribution and location of employment activities in the Toronto Region.

- The technological changes taking place are likely to result in significant social impacts.

Economic Growth

- The Toronto Region forms an economic entity; the future economic growth of its five separate regions are interdependent.

- The Toronto Region should be able to maintain its strength as an economic generator of new ideas, new technologies and new economic activities.

- The surrounding regions will likely continue to attract an increasing proportion of economic and employment growth.

- It is expected that **Metropolitan Toronto** will experience continued though slower economic growth, but will remain dominant in the Toronto Region.

- The manufacturing sector will probably continue to be a major source of wealth and output but will experience a continued decline in employment.

- It appears that we will have to look primarily to the service sector for the production of new jobs.

- Continued growth in Metro Toronto will tend to centre on service sector activities and new industrial uses.

- **The Central Area of Toronto** will likely continue to be the dominant focus of urban activity in the Region.

8.0 FUTURE DIRECTIONS

The current pace of change creates a challenge for government to ensure that the economy will successfully accommodate the social and economic adjustments. Increased competition means that the metropolitan community will have to actively seek out economic opportunities. Maintaining the health of the metropolitan economy necessitates ensuring that the metropolitan labour force possesses the skills required for future employment needs. The changes require the Metropolitan government to exercise a leadership role in helping guide the process of change and adjustment.

New growth in Metropolitan Toronto will continue to centre on the region's strength as an economic generator of new ideas and economic activities. The community, business and personal service sector (especially services to business management, accommodation and food and health services) is expected to be the largest source of future growth. Other important economic contributors are likely to include the tourism sector, specialized production, high quality manufacturing and high technology industries including research and development activities. The region should maintain its function as a national diversified centre of advanced services.

Economic trends and technological innovations will continue to have significant impacts on our society. However, Metropolitan Toronto is well equipped to take advantage of future opportunities. The Metropolitan economy possesses a diversified economic base and a flexible industrial sector. Although the service sector is likely to dominate, manufacturing should remain an important contributor to the economy. Metro Toronto's well developed educational and research institutions can provide the necessary educational and retraining opportunities to ensure that the labour force is skilled in the new technologies.

Metropolitan Toronto also possesses an urban structure which should enable it to respond to the technological and economic changes. Its industrial areas are well suited to adopt new production technologies, such as the "just-in-time" system, which will become increasingly important. The industrial areas are well located in relation to transportation facilities. The Metropolitan sub-centres are an important part of Metro's urban structure and are a suitable form for the new urban economy dominated by the service sector. In responding to the technological and economic changes, policies and programs should seek to enhance and retain these areas and support the overall urban structure of Metropolitan Toronto.

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INTRODUCTION

1.0

1.1 Purpose

The purpose of this report is to highlight some of the major technological changes and economic trends which are occurring and assess their implications on:

- the employment and economic structure of Metropolitan Toronto;
- the employment assumptions of the Metropolitan Official Plan; and
- Metropolitan planning policies related to the economic structure of the Metropolitan planning area.

The planning implications and employment assumptions arising from this report serve to provide a context and direction for other studies reviewing the policies of the Metropolitan Official Plan. In this regard the report is a common background document to the subsequent reports on the subjects of "centres", "office development" and "industrial areas".

1.2 Methodology

The study involved a literature review which included government publications, books, reports by business, academic, public and non-profit agencies, articles in newspapers, magazines and journals, and Metroplan publications. Interviews were held with a number of academics, business leaders, government officials, municipal planners, real estate analysts and labour officials. A bibliography is appended to the report.

1.3 Organization of Report

The report begins by reviewing technological innovations and their applications and examines their effect on the workforce and in the workplace. An outline of the national and provincial economic picture is followed by an examination of the Metropolitan Toronto and Regional economies and current economic trends.

This leads to a review of the social implications of these trends and a discussion of the planning and locational implications on the economic sectors of Metropolitan Toronto. The final section reviews the employment assumptions of the Metropolitan Official Plan and provides conclusions to guide future policy formulation.

FIGURE 1

METROPOLITAN TORONTO PLANNING AREA

TECHNOLOGICAL INNOVATIONS

2.0

2.1 New Technologies

"The rapid advance of science and technology is bringing about far-reaching changes which will require adjustments, in the short and the long terms, in virtually all aspects of our society" (Royal Commission on the Economic Union and Development Prospects for Canada, Volume 1, p. 125). Such statements are being expressed in both Canada and the United States by governments, business leaders and researchers. In the past, society has experienced technological changes of varying degrees of magnitude and importance. It is a popularly held belief that the changes which we are currently experiencing promise to be as dramatic, if not greater, than were the changes brought on by the Industrial Revolution in the 19th century. The development and adoption by industry of new technology involving new products, processes, techniques and services are having a significant impact on our employment and economic structure.

At the centre of this technological revolution is the development of microelectronics technology. Microelectronics deals with the incorporation of hundreds of thousands of microscopic components and circuits within a single tiny component called the "chip". The more components integrated into a single chip, the greater its capacity and speed. **While the power of the chip has increased over a hundred times in the past decade, its cost has dropped a thousandfold thereby bringing the use of microelectronics into everyday life.**

Microelectronics technology can be introduced into almost every sector of society and every economic activity. The growing power of the chip is enabling equipment to perform higher level, more complex operations at greater speed but occupy less space and consume less power. Its use increases reliability and accuracy and has the potential to vastly increase productivity. The result of ongoing developments in chip technology is that the cost of goods and services is decreasing. **Innovations in microelectronics technology has also fuelled the development of a set of other new technologies.**

A recent study of the Ontario Task Force on Employment and New Technology categorized emerging and new technologies into ten groups. (See Table 1.) It identified four major groups which are likely to cause significant employment impacts over the next decade: technologies of office automation, telecommunications, computers and advanced manufacturing. These categories are not mutually exclusive as for example computer technology is a component of other technologies. Table 1 characterizes these new technologies into different stages of development. Some are only at the research and development stage while others are becoming widely commercially available. These new and emerging technologies have a broad range of applications.

Office Automation Technology

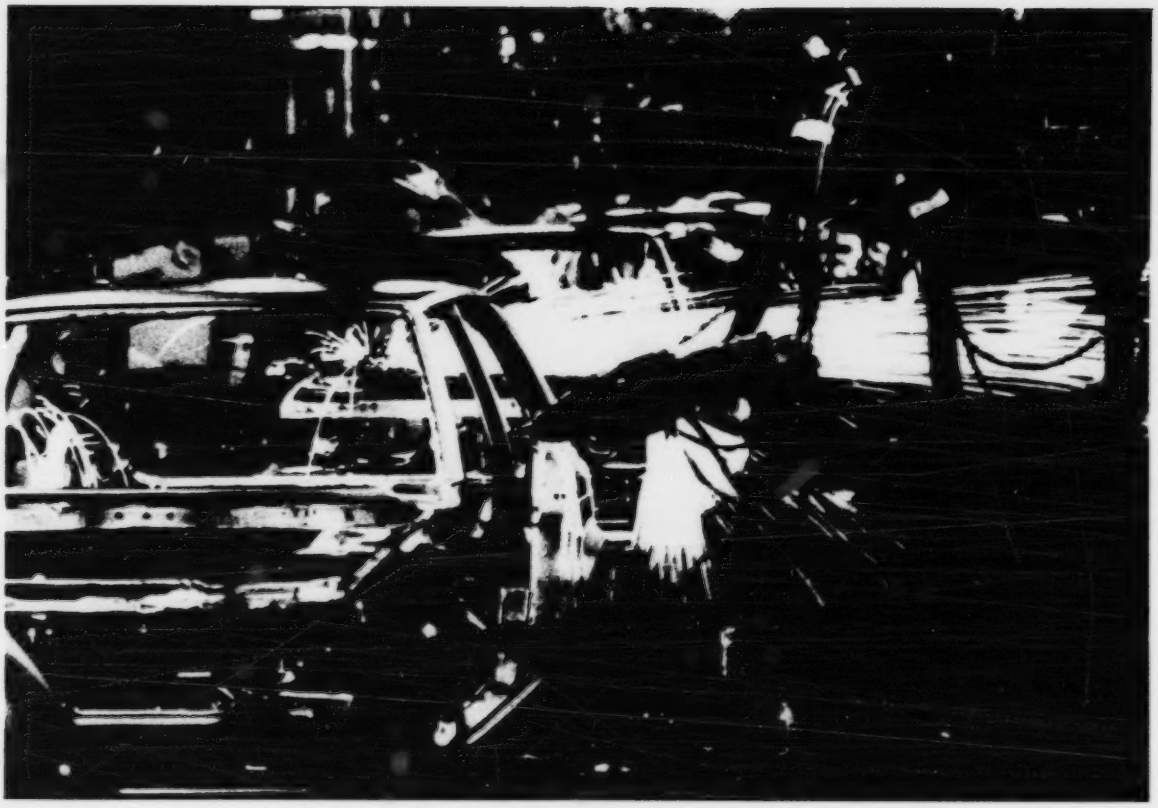
A range of new technologies and products are being incorporated in office functions leading to the automation of the office place. These include the use of word processors, computers, electronic mail and electronic filing. Future applications include the creation of fully integrated work stations which can perform a number of functions including voice and data communications.

Telecommunications Technology

Significant developments in telecommunications technology include fibre optics, telephone communications, electronic distribution of mail, transmission of documents and video conferencing. Satellite systems enable the transmission of high volume data communications between regionally dispersed businesses.

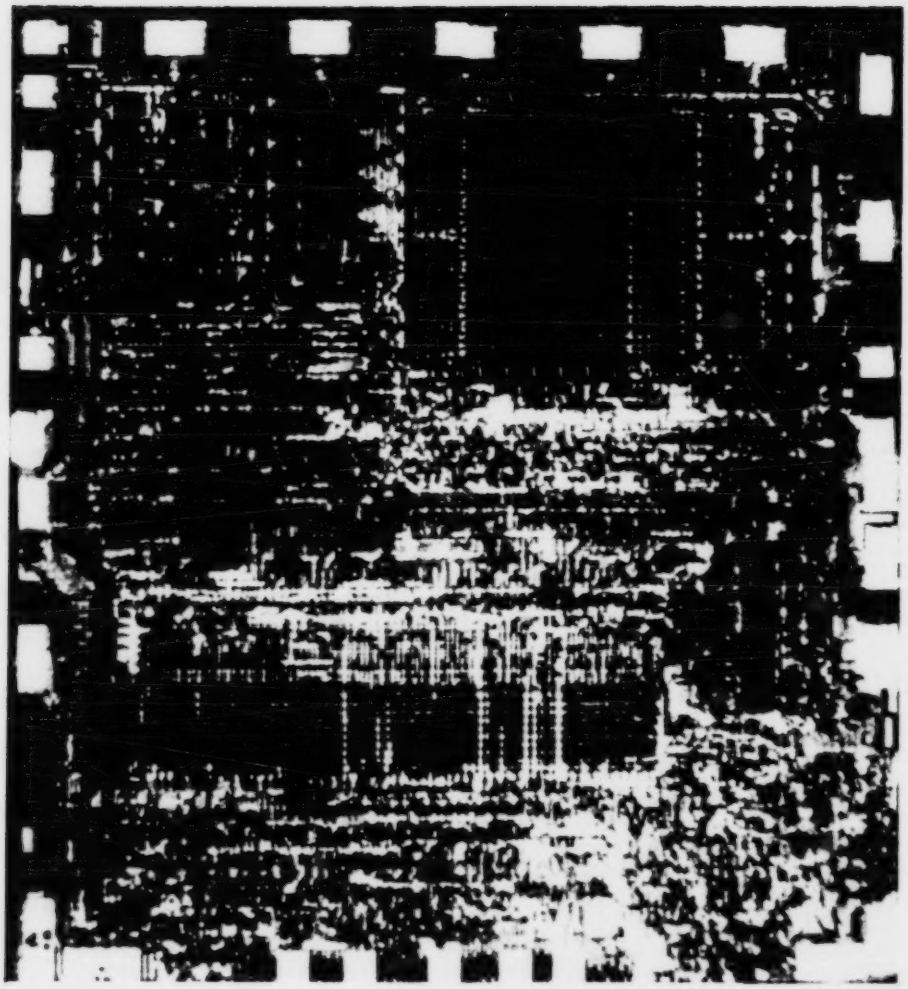
Fibre optics (glass threads that carry information on pulses of light) has a much higher carrying capacity than other transmission mechanisms, thereby enabling the digital transmission of larger volumes of voice, video and data communications. The use of optical fibres increases the speed and volume of data which is directly exchanged among offices, plants and customers.

A new development is the "teleport" or satellite communications centre. The teleport is equipped with earth stations or discs which transmit and receive voice, data and facsimile transmissions from communications satellites. Users on the ground will be linked to the teleport earth stations via a fibre optic network.



Use of robotics in the auto industry.

Courtesy of Honeywell



Magnification of a micro chip.

Courtesy of Honeywell.

Table 1: CATEGORIZATION OF NEW TECHNOLOGIES

Technology	Research and Development Stage	Commercial Application Stage 1985–1995
1. Office Automation Technology		
Word Processor		X
Fully Integrated Workstation		X
Microcomputer		X
Local Area Network		X
Electronic Filing Systems		X
Internal Data Base Management Systems		X
External Data Base Services		X
2. Telecommunications Technology		
Video Conferencing		X
Private Automate Branch Exchange		X
Videotex		X
Fibre Optics		X
Electronic Mail		X
Dedicated Head Office/Plant or Customer Computer Links	X	X
Facsimile Transmission		X
Dedicated Satellite Systems		X
3. Computer-Based Technology		
Very Large Scale Integrated Circuits		X
Supercomputer	X	X
Artificial Intelligence/Expert Systems	X	X
Fourth Generation (Natural) Programming Languages	X	X
Voice Synthesis/Recognition	X	
Electronic Funds Transfer System		X
Customer Sales and Service Systems		X
Point-of-Sale Scanning Systems		X
Automated Teller Machines		X
Smart Cards	X	X
Computer Decision Support Systems		X
4. Advanced Manufacturing Technology		
Computer-Aided Design		X
Computer-Aided Manufacturing		X
CAD/CAM Integration		X
Computerized Numerically Controlled Machine Tools		X
Automated Storage and Retrieval		X
Manufacturing resource planning		X
Computer-Aided Inspection and Testing		X
Flexible Manufacturing Technologies		X

Technology	Research and Development Stage	Commercial Application Stage 1985–1995
4. Advanced Manufacturing Technology (Cont'd)		
Automated Shop Floor Data Collection		X
Computerized Process Control Systems		X
Robotics		X
Computerized Decision Support Systems		X
Computerized Order Entry Inventory Control		X
Computer-Integrated Manufacturing		X
5. Biotechnology		
Genetic Engineering	X	
Enzyme and Enzyme Systems	X	
Cell Fusion		X
Plant Cell Culture	X	
Process and Systems Engineering	X	
6. New Materials Technology		
Powder Metallurgy		X
Composites		X
New High-Strength Ceramics	X	X
7. Laser Technology		
Laser Imaging		X
Laser Cutting/Welding/Drilling		X
Optical Data Storage	X	X
Opto-Electronics	X	
Medical Applications		X
8. Space Technology		
Satellites		X
Aerospace Equipment	X	
9. Energy Technology		
Solar	X	
Watermill	X	
Windmill	X	
Power Canals	X	
Ocean Thermal Energy Conversion	X	
Advanced Energy Storage Batteries	X	
10. Ocean Technology		
Deep Sea Mining	X	

Source: Ontario Task Force on Employment and New Technology, Emerging New Technology 1985-95, Appendix 3: pp. 7-8, 1985.

Computer Based Technology

Computer technologies have applications in all industries. Current applications include monitoring of inventories, electronic transfer of funds, automated teller machines and support systems for management providing data storage and manipulation and monitoring information. Future uses include "smart cards" which can store various financial information, voice synthesis and voice recognition and optical character recognition.

Advanced Manufacturing Technology

New computer innovations are being used in the graphic modelling and simulation of designs for production and the carrying out of manufacturing processes. "Robotics", involving the programming of machines and their control by computers to perform a series of operations, is increasingly being used in manufacturing. The focus of manufacturing automation is the improvement of product quality, greater precision and reliability, higher productivity and more flexibility for smaller batch production. **Fully integrated factories linking manufacturing, production and scheduling systems are the trend of the future.**

2.2 Adoption of New Technologies

In order to survive, it is evident that industries will have little choice but to invest in new technologies. Economic considerations involving competitive pressures and cost reduction are the driving force of this development. During the next decade it is expected that a significant proportion of industries will adopt a wide variety of new technologies. While initially new technology is used to improve existing processes, unanticipated applications frequently result (e.g., commercial applications resulting from space research). **The trend points to the convergence and linking in various technologies leading to the magnification of their effects.**

2.3 High Technology Industry

Arising out of the technological revolution is the focus on high technology industries. There is a lack of concensus as to what constitutes hi-tech industry.

Recent definitions are focussing on key variables which differentiate high-tech from other industries. These include the following:

- non-routine as opposed to routine standardized activities;
- a high level of research and development activity and opportunity for technological innovation;
- a high level of the labour force engaged in engineering, scientific, technical and professional work;
- the development or production of a technology intensive product, process or system; and
- any firm that operates on "state of the art" knowledge, e.g., use highly technologically dependent processes.

The variables make any concise definition of "high-tech" industry more or less restrictive. For example, distinguishing the different activities of a firm will lead to one component of a firm being described as "high-tech" and another not. Other variables separate between firms which merely use high technology in their operation from those industries which are actually involved in high technology development.

2.4 Effects of New Technology on the Workplace and Workforce

New technological advances and their applications have enormous implications on society. The diffusion of new technology throughout the economy is creating major social and economic changes. This section outlines effects on the workplace and workforce.

A. Change in the Nature of Production

We are witnessing a change in what and how the economy produces. Our economy is undergoing a restructuring. The nature of the production process is expanding to include not only the physical production of goods but also the creation, processing and distribution of information. Innovations in computer, office and communications technologies are key elements in this shift. It is observed by many writers that while in the industrial society the strategic

resource was physical capital (equipment, raw materials, buildings), in the new information society the strategic resource in the production of wealth is knowledge (Naisbitt, Chapter 1). This shift is demonstrated in the rapid growth of service industries.

B. Change in Employment

Although many factors including social, demographic and economic, influence employment in our society, it is recognized that **the diffusion of new technology is changing traditional job patterns in both the amount of employment and the nature of employment.**

(1) Amount of Employment

A review of the literature indicates that there are quite different views as to the impacts of new technology on the amount of employment. One view states that the adoption of new improved technologies in production processes stimulate additional output, resulting in a growth in employment.

In examining the Canadian historical experience, the Royal Commission on the Economic Union and Development Prospects for Canada notes that at the same time as major technological changes have been accommodated, output and employment have steadily increased (Volume 2, Chapter 8). A review of employment trends after World War II shows that the continued shift from agriculture to industry brought about new employment opportunities. Although in the short term major adjustments had to be made, new industrial jobs were created. To the extent that new technology resulted in employment losses in one area, a comparable number of jobs were generated by the economy elsewhere.

But many observers believe that the technological changes of today are of a different nature and magnitude than those of the past. There is concern that the pace of change and diffusion of new technologies are so rapid that the creation of new jobs will not equal those that are lost. It is contended that new technologies are replacing both the mental and physical functions of workers, thereby having the potential to replace humans (Newton, p. 27).

This raises the prospect that in the short to medium term technological innovations may have significant effects on employment with a prospect of a fairly high amount of permanent or long term unemployment for a significant portion of the labour force.

A survey of automation in Canada during the period 1980 to 1985 indicates that the adoption of new technologies has resulted in some labour displacement but this was offset by the employment generated due to increased volume (Betcherman, p. 7). However, while in the past five years much of the innovation involved fairly low cost office technologies (e.g., word processing and personal computers) in the next five years there will be more emphasis on the adoption of more sophisticated process automation systems (e.g., computer-aided design and manufacturing). This is expected to lead to greater labour adjustment (Betcherman, p. 7).

While historical evidence indicates that the economy should be able to accommodate the adjustments resulting from new technological changes, the current pace of change challenges this viewpoint. The question arises whether the future is likely to be a continuation of past trends (Royal Commission on the Economic Union, Volume 1, p. 163).

(2) Nature of Employment

Concerns are being expressed by many observers about the effects of new technology on the more detailed employment picture. The nature of work tasks is being dramatically changed. Automation of office, manufacturing and production sectors is directly displacing certain types of work tasks. Routine jobs are either being eliminated or transformed. **Office work which has been the fastest growing and largest source of employment may see many jobs lost.** (See, for example, U.S. Congress, Office of Technology Assessment.)

Some occupations are expected to be in oversupply while others may eventually become redundant. **What is clear is that the new jobs being created are frequently not being staffed by those workers who have been displaced by technological change.**

The skills needed for new jobs are often entirely different than those jobs that have been lost. Generally, the introduction of new technology is resulting in a broad array of jobs requiring more skills, other jobs are becoming less skilled while the need for some skills will be eliminated. Many workers will have to be trained to use the new processes and equipment and others will have to be retrained as their skills become obsolete. **A concern is that increasingly, employment is concentrating in either the highly skilled or low skilled jobs while diminishing the need for well paid skilled and semi-skilled jobs which have been the backbone of the post-war economy** (Kuttner, 1983; Cordell, p. 40-41).

C. Changes in Spatial and Locational Requirements

The diffusion of new technology is resulting in changes in the spatial and locational requirements of the various industrial sectors. The related planning and locational implications will be discussed in Section 6.

NATIONAL AND PROVINCIAL ECONOMIC TRENDS

3.0

3.1 Introduction

Trends in the national and provincial economy reflect the adoption of new technologies as discussed in the previous section as well as changes in international trade and structural changes in the economy.

Despite the fact that Canada's economy is one of the major advanced economies in the world, it continues to be highly dependent on natural resources. This is illustrated by large export surpluses in sectors such as agriculture and processed food, forestry products, metals, minerals and energy. In 1983, over half of the value of all exports were in the resource sector (Royal Commission . . . , Vol. 2, 1985, p. 406). For a variety of reasons, mainly related to Canada's historical development and strong dependence on foreign capital, the secondary sector is not as strong as would be expected in an affluent, developed country. This is reflected by the high level of imports of manufactured goods, relative to exports, especially in the area of technology-intensive manufactured goods.

The Canadian economy has tended to be split between the industrially developed centre that is primarily reliant on the domestic market and resource-producing regions on the periphery which are mainly dependent on exports. (Science Council of Canada, 1982). Ontario, located in the industrial centre, has a diversified economy with strong manufacturing and service sectors. The manufacturing sector is the base of the Province's economy and accounts for half of all manufacturing jobs in Canada.

3.2 Employment by Sector

As in most major industrialized economies, the service sector employs the largest number of Canadian workers. In 1985, the tertiary or service sector, including transportation, communications and other utilities, employed just over 70% of the employed labour force. (See Table 2.) The secondary sector which includes manufacturing and construction, accounted for 22% of all jobs.

Table 2:

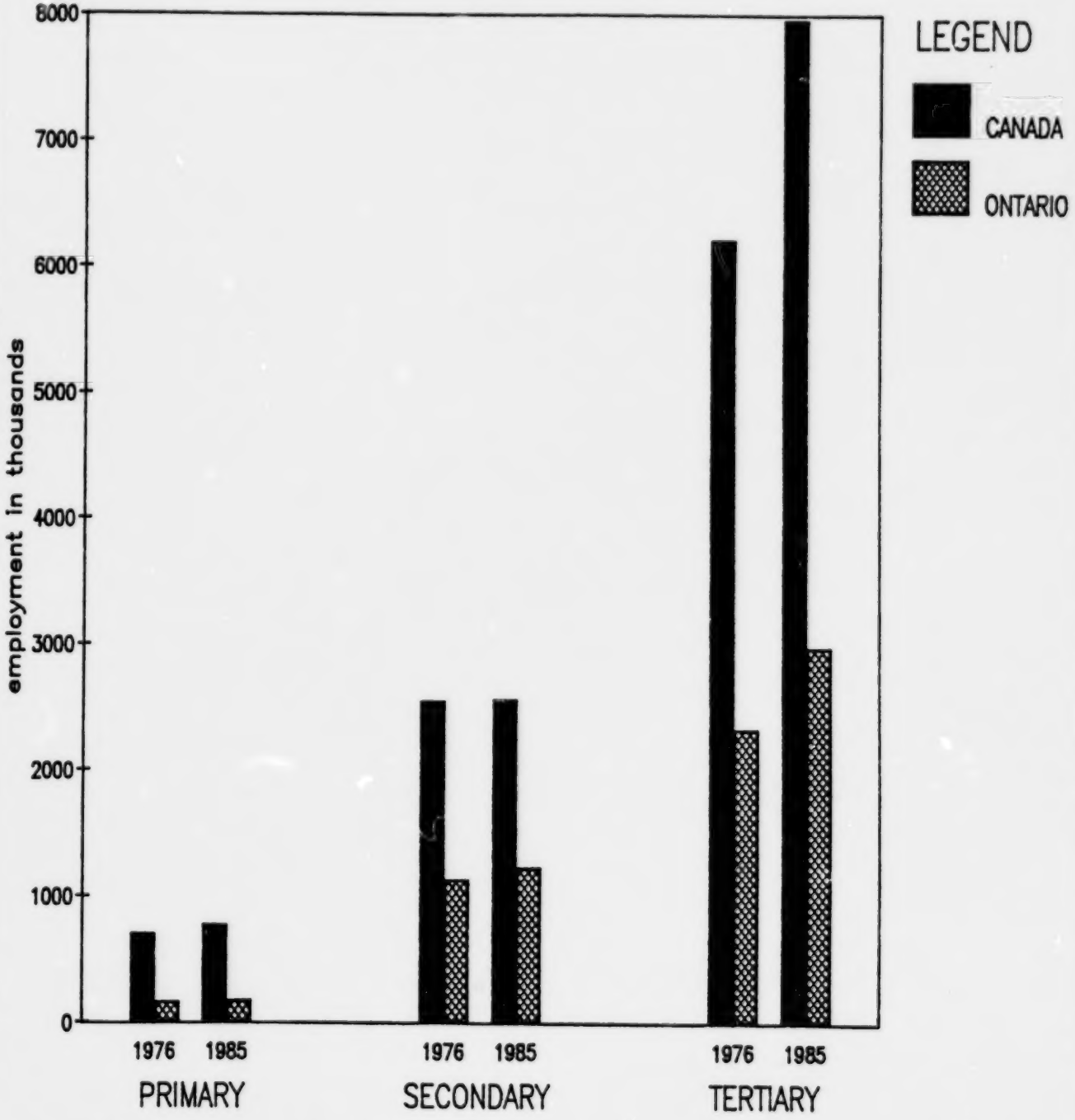
EMPLOYMENT BY INDUSTRY FOR CANADA AND ONTARIO ANNUAL AVERAGES 1976 AND 1985, LABOUR FORCE SURVEY

	Ontario					Canada				
	1976		1985		1976-85 Per cent Change	1976		1985		1976-85 Per Cent Change
	Thousands	%	Thousands	%		Thousands	%	Thousands	%	
All Industries	3 643	100.0	4 402	100.0	20.8	9 477	100.0	11 311	100.0	19.4
Primary	169	4.6	182	4.1	7.6	707	7.4	781	6.9	10.5
Agriculture	112	3.0	127	2.9	13.4	472	5.0	488	4.3	3.4
Other Primary	57	1.6	55	1.2	-3.5	235	2.4	293	2.6	24.9
Secondary	1 139	31.2	1 238	28.1	8.7	2 556	27.0	2 568	22.7	4.7
Manufacturing	909	25.0	1 007	22.9	10.8	1 921	20.3	1 981	17.5	3.1
Construction	230	6.2	231	5.2	0.4	635	6.7	587	5.2	-7.6
Service-Producing Industries	2 335	64.1	2 983	67.8	27.8	6 215	65.6	7 963	70.4	28.1
Transportation, Communication and Other Utilities	271	7.4	309	7.0	14.0	824	8.7	884	7.8	7.2
Trade (Wholesale and Retail)	610	16.7	761	17.3	24.8	1 644	17.3	2 001	17.7	21.7
Finance, Insurance and Real Estate	217	6.0	255	5.8	17.5	496	5.2	629	5.6	26.7
Community, Business and Personal Services	973	26.7	1 367	31.1	40.5	2 573	27.1	3 648	32.1	41.8
Public Administration	264	7.2	291	6.6	10.2	678	7.2	802	7.1	18.3

Source: Statistics Canada, Labour Force Survey, Special Tabulation and Catalogue 71-001, February 1986.

Provided by: Ontario Ministry of Treasury and Economics
Economic Policy Branch, May, 1986

Graph 1: DISTRIBUTION OF EMPLOYMENT BY ECONOMIC SECTOR CANADA & ONTARIO 1976 & 1985



Source: Statistics Canada, Labour Force Survey #71-001(Feb.,86)

Manufacturing accounted for 17% of all jobs in 1985. As shown in Table 3, manufacturing in Canada has accounted for the lowest proportion of jobs among major industrial countries since the early 1970's. The primary sector of the economy, including agriculture and other primary industries, represented the smallest proportion of the labour force in 1985 - just over 6%.

Compared to Canada as a whole, Ontario has a stronger industrial base. In 1985 manufacturing accounted for 23% of jobs while the service sector, which accounted for the largest share, represented 68% of jobs.

Ontario showed somewhat divergent growth patterns from national trends between 1976 and 1985. Manufacturing employment grew by a much higher rate in Ontario than in the rest of Canada, whereas Canada had a much higher growth rate than Ontario in primary industries (other than agriculture). The service sector recorded the highest growth levels of all industries in both Ontario and Canada between 1976 and 1985 with community, business and personal service industries increasing most rapidly. (See Table 2.)

3.3 Movement Towards the Service Sector

One of the major changes that has been occurring in developed industrial countries is the shift towards the service sector. Nevertheless, growth in the service sector is to a large extent tied to the goods producing sector.

In order to better understand the basis for growth in the service sector, some analysts have divided this sector into functional categories, as shown on Table 4. An American study of changes in the service sector using these categories found that growth in the service sector has been concentrated in producer services and in the government sector (Stanback and Noyelle, 1982). "Producer services" refers to those services used in the production of goods or in bringing such goods into the hands of consumers, e.g., research and development, data processing, finance, management consulting, marketing and advertising. A recent study by the Government of Ontario had similar results with the greatest growth in jobs between 1941 and 1981 occurring in producer and social services (Ministry of Treasury and Economics, 1986). Growth in producer services has resulted from

Table 3:

COMPARISON OF PERCENTAGE DISTRIBUTION OF EMPLOYMENT IN DEVELOPED ECONOMIES

	Primary	Mining	Manufac-turing	Construc-tion	Utilities	Services
Canada						
1960	**13.2**	**1.6**	**24.7**	**7.0**	**8.6**	**44.8**
1970	**7.7**	**1.6**	**22.7**	**6.0**	**8.8**	**53.3**
1981	**5.5**	**1.8**	**19.4**	**5.9**	**8.3**	**59.1**
United States						
1960	9.1	1.2	28.1	4.8	6.7	50.0
1970	4.7	0.8	26.0	4.8	6.1	57.7
1981	3.7	1.1	21.3	4.4	5.5	64.0
United Kingdom						
1960	4.3	1.7	34.7	6.8	8.3	45.3
1970	3.2	1.7	34.7	6.8	8.3	45.3
1981	2.6	1.4	26.2	6.5	8.0	55.3
Germany						
1960	14.0	3.1	36.7	8.5	6.5	31.2
1970	8.6	1.2	39.4	7.9	6.4	36.4
1981	5.5	1.4	33.6	7.5	7.0	45.0
Japan						
1964	26.8	1.1	24.3	6.2	6.5	35.6
1970	17.4	0.4	27.1	7.7	6.9	40.4
1981	10.0	0.2	24.9	9.8	6.7	48.4
Sweden						
1964	12.8	0.6	28.5	9.1	7.5	41.6
1970	8.4	0.5	26.5	9.5	7.4	47.8
1981	5.3	0.4	22.0	7.4	7.8	57.1
Six-country average						
1964	12.2	1.4	30.0	7.0	7.4	42.1
1970	8.3	1.0	29.4	7.1	7.3	46.8
1981	5.4	1.1	24.6	6.9	7.2	54.8

Source: Report of the Royal Commission on the Economic Union and Development Prospects for Canada, Vol. 1, Ottawa, 1985. Table 2-12, p. 143. From Michael F. Charette, Robert P. Henry, and Barry Kaufmann, "The Evolution of the Canadian Industrial Structure: An International Perspective", in **Canadian Industry in Transition**, Vol. 2, prepared for the Royal Commisison on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).

the increasing size and specialization of the market and the increasing size of corporations, factors which give rise to a demand for specialized services. The more labour intensive nature of services also helps to explain its high levels of employment growth.

Table 4:

CLASSIFICATION OF SERVICE SECTOR INDUSTRIES

1. Distributive services
   - Transportation, communications, and utilities
   - Wholesale
2. Producer services
   - Finance, insurance, and real estate
   - Business services
   - Legal services
   - Membership organizations
   - Miscellaneous professional services
   - Social services
3. Non-profit services
   - Health
   - Education
4. Retail services
5. Consumer services
   - Hotel and other lodging places
   - Personal services
   - Auto repair, services, and garages
   - Miscellaneous repair services
   - Motion pictures
   - Amusements and recreation services
   - Private households
6. Government and government enterprises

Source: Adapted from Stanback and Noyelle, Cities in Transition, p. 148

The movement towards the service sector is further illustrated by recent trends in net job creation. (See Table 5.) Business, social and professional services had the greatest employment increases between 1974 and 1982, while amusement, recreation and accommodation as well as the financial, insurance and real estate sectors also recorded substantial levels of job growth. Among goods producing industries, only mining recorded high levels of growth.

International trends in the movement of capital and the application of high technology in industrialized countries are likely to result in a continued increase

Table 5:

EMPLOYMENT GAINS AND LOSSES BY CANADIAN INDUSTRY, 1974-1982
(Percentage of 1974 base employment)

	Gains	Losses	Net Change
Business services	207.7%	48.2%	159.4%
Social Services	117.6	27.4	90.2
Professional services	128.7	41.4	87.3
Amusement/recreation	115.0	40.9	74.1
Mining	94.1	42.6	52.6
Accommodation	97.1	45.0	52.0
Finance	93.5	43.9	49.6
Agriculture	83.6	39.1	44.5
Health services	54.6	10.7	44.0
Miscellaneous services	83.2	41.5	41.7
Transport	75.1	38.5	36.6
Trade	63.8	42.2	21.7
Forestry	69.4	50.1	19.2
Education	38.7	20.5	18.2
Construction	68.0	38.5	14.8
Manufacturing	48.4	41.1	7.3
Personal services	51.8	45.1	6.7
All industries	**66.1**	**41.4**	**24.7**

Source: Carmichael. Reorienting the Canadian Economy. Policy Review and Outlook, C.D. Howe Institute 1986. Based on data from Department of Regional Industrial Expansion, **A Study of Job Creation in Canada**, 1974-82 (Ottawa, 1985).

in employment in the service sector. As standard or lower levels of technology are exported abroad, developed countries like Canada are becoming more dependent on sophisticated technologies. As stated earlier, this will mean a shift towards jobs in which "knowledge" represents the key input in production, a shift that will be technology-driven.

3.4 Industrial Performance

Canada developed as a country which exported its natural resources or semi-processed goods and in turn imported a large proportion of the finished manufactured goods it consumed. Since the early sixties, however, the share of the value of exports accounted for by the resource sector has declined considerably from 81% to 51% (Royal Commission . . . , Vol. II, 1985, p. 407). Much of this shift can be attributed to the Auto Pact. Despite the increase in the level of manufactured goods exported abroad, Canada's trade deficit in high technology industries has been growing (including such industries as machinery, transportation equipment, electrical products, chemicals and chemical products and computer equipment), although its proportion of two-way trade in such items has remained relatively stable (Economic Council of Canada, 1983, p. 104).

Canada's manufacturing industries are being caught in a squeeze between increased competitive pressure from lower cost producers in newly industrializing countries on the one hand, and more efficient producers in technologically advanced countries on the other hand. In a world where the trend is towards growing international trade, Canadian industry will need to improve its competitiveness to survive, particularly in high-technology industries.

Ontario's importance as a centre for manufacturing makes the Province particularly vulnerable to growing competition from abroad and the movement towards offshore production. Table 6 provides a profile of Ontario's manufacturing sector. The most important industries are: transportation equipment (mainly automobiles), food and beverages, metal fabricating, machinery, primary metals and chemical products. In most cases Ontario's employment represents a half or more of Canada-wide employment.

Table 6:	MANUFACTURING INDUSTRY IN ONTARIO, 1984			
	Gross Provincial Product		Employment	
	Per cent of Ontario Manufacturing Sector	Ontario as Per cent of Canada	Per cent of Ontario Manufacturing Sector	Ontario as Per cent of Canada
Food and Beverage	11.1	44.6	9.5	43.2
Tobacco	0.7	41.5	0.3	n/a
Rubber and Plastic	3.6	62.5	3.9	55.6
Leather	0.8	54.0	1.6	62.5
Textiles	2.8	50.6	3.3	50.0
Knitting Mills	0.7	28.0	6.8	n/a
Clothing	1.4	27.6	2.7	30.7
Wood	1.5	17.4	2.7	22.8
Furniture and Fixtures	1.9	55.6	3.1	46.3
Paper and Allied	5.4	33.6	5.1	36.6
Printing	5.1	50.7	6.2	49.7
Primary Metals	8.4	56.7	8.1	57.6
Metal Fabricating	8.4	59.1	10.3	6.38
Machinery	7.1	63.0	6.9	6.25
Transportation Equipment	13.3	77.5	12.4	72.1
Electrical Products	8.7	66.3	8.6	70.2
Non-Metalic Mineral Products	2.7	47.1	3.0	47.8
Petroleum Products	3.2	40.8	1.1	48.3
Chemical Products	8.9	59.5	5.4	52.6
Miscellaneous	3.9	64.3	4.7	59.1

Provided by Economic Policy Branch, Ontario Ministry of Treasury and Economics, 1986

Although manufacturing employment has shown a net gain between 1976 and 1985, the combined effect of the recession, foreign competition and increased automation has actually resulted in a decrease in employment in the manufacturing sector in Ontario by 37 000 workers or 3.5% between 1981 and 1985. Slow growth or decline has been evident in employment in some industries such as clothing and textiles, primary metals and electrical products. However, the recent resurgence of the clothing industry has shown that some industries can be rejuvenated and become more competitive.

An aspect of the Canadian economy of particular concern is the low level of productivity growth - the lowest of the major industrial countries. Canada's growth in labour productivity in manufacturing (where labour productivity equals output per hour worked) fell from an annual average of 5.0% for the period 1967 to 1973, to 1.1% per annum for the period 1974 to 1981. (See Table 7.) While some of the decline in productivity can be attributed to the impact of higher energy prices and cyclical conditions, most analysts believe there was some decline in the underlying rate of productivity, i.e., the development and application of new technology.

There are, of course, some industries in Canada that are quite efficient, e.g., the steel industry and various resource industries. In addition, other industries, such as the automobile industry have been investing large sums of money in making their plants more efficient (e.g., G.M.'s recent investment of over $3 billion in its Oshawa plants).

Improved levels of productivity hold the key to Canada's ability to compete in the world market which is characterized by growing interdependence and a movement towards lower trade barriers. In the 1960's and 70's Canada was in second place behind the United States in terms of productivity among major industrial countries (Daly, M.J., 1985). A recent survey by the European Management Forum in Geneva shows Canada was in second place in 1983, behind the United States, in terms of productivity as measured by the manufacturing value added per worker, up from 10th position in 1982 (Financial Post, 1986).

Canada has not performed well in terms of innovation of products and process technology (Grossman, 1984). Furthermore, Canadian expenditures in research and development have been well behind its major industrial competitors. Despite the generally low level of innovation, certain types of firms have been more successful - in the areas of resource extraction, engineering and scientific services, computer services, and in "high tech" industries.

Many investigators have concluded that Canada is slow to adopt new technologies (Royal Commission . . . , Vol. 2, p. 93). As an illustration, Canada has lagged in the adoption of NC (numerically or computer-controlled machines) and industrial robots. A provincial report shows that in 1984 Canada had only adopted 3.7 robots per 10 000 workers employed in manufacturing compared to 32.1 in Japan, 20.2 in Sweden and 7.2 in West Germany (Ontario Ministry of Industry, Trade and Technology, 1985, p. 38). Most industrial robots in Canada are concentrated in the automobile industry. The United States also tends to lag in this area with 4.7 robots per 10 000 workers.

For some time now there has been a growing debate as to Canada's industrial future. On the one hand are those who argue that plant closures, higher levels of imports of finished goods and displacement of industrial workers reflect the process of "deindustrialization" as Canada becomes more dependent on exporting raw resources and semi-finished goods. On the other side are those who argue that Canada's manufacturing sector has not withered away and that the trade deficit in high technology items simply reflects Canada's traditional dependence on imported high technology items.

While it is beyond the scope of this paper to evaluate the merits of these arguments, it is important to be aware that the loss of manufacturing industry in Canada is more than an inevitable restructuring of the international division of labour; it also reflects some inherent weaknesses in our industrial structure.

Despite the growing importance of the service sector, especially in terms of employment, it is clear that manufacturing continues to make an important contribution to the economy because of its multiplier effect in stimulating growth in the rest of the economy. Direct spin-offs from manufacturing appear

Table 7:

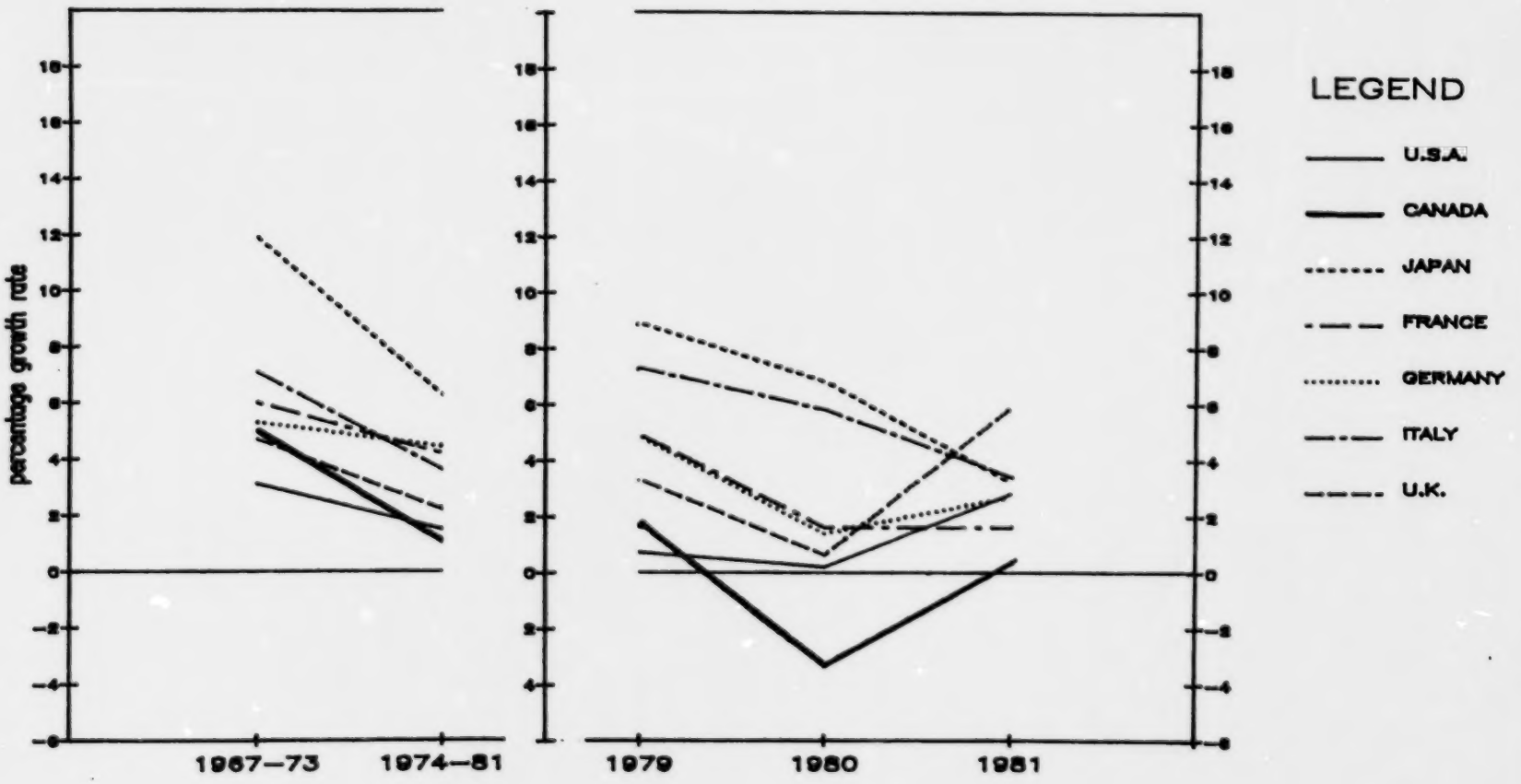
LABOUR PRODUCTIVITY IN MANUFACTURING IN CANADA AND MAJOR O.E.C.D. COUNTRIES

Years	U.S.A.	Canada	Japan	France	Germany	Italy	U.K.
			(average annual percentage growth rates)				
1967-1973	3.1	5.0	11.9	6.0	5.3	7.1	4.7
1974-1981	1.5	1.1	6.2	4.2	4.4	3.6	2.2
			(annual percentage growth rates)				
1979	0.7	1.7	8.9	4.9	4.9	7.3	3.3
1980	0.2	-3.3	6.8	1.6	1.4	5.8	0.6
1981	2.8	0.3	3.2	1.6	2.7	3.4	5.9

Note: Labour productivity = output per hour worked.

Source: Report of the Royal Commission ..., op. cit., Vol. 1, p. 136. From U.S. Department of Labour, Bureau of Labour Statistics, Office of Productivity and Technology, **Output per Hour, Hourly Compensation and Unit Labour Costs in Manufacturing, Eleven Countries, 1950-81** (Washington, D.C., December, 1982).

Graph 2: GROWTH IN LABOUR PRODUCTIVITY IN MANUFACTURING MAJOR O.E.C.D. COUNTRIES



Source: Report of the Royal Commission....op.cit.V1.p136

to be greater than in any other major sector of the economy. While the multiplier effect for the service sector is estimated at 1.3, the manufacturing sector has a higher rate at 1.9 (Gardner, Industrial Development in Metropolitan Toronto, p. 24). This means that for every dollar generated in manufacturing, it stimulates $0.90 elsewhere in the economy. Conversely, loss of manufacturing jobs has a greater economic impact than in the service sector. **All levels of government, including the Metropolitan level, have a role to play in preserving and promoting industry in which Canadian companies can maintain their competitive edge.**

Ontario, which has a larger share of high technology industries in Canada than of manufacturing in general, has a strong interest in encouraging future improvements in high technology industries. These industries have a higher productivity level and have registered higher levels of employment increases than manufacturing as a whole. While high technology industries still represent a relatively small share of manufacturing output and employment, around 14% (Grossman, 1984, p.8), these industries can be expected to become increasingly important to Ontario's economy. According to a recent study, the Toronto area is the major focus of high technology firms in Ontario. (Miller, 1986)

3.5 Other Employment Trends

Growth in the Canadian labour force was quite rapid in the late 1960's and 1970's as the "baby boom" generation entered the workforce and female participation rates increased. From the 1960's onward (until the recession of 1982 and 1983) Canada registered the highest levels of growth in employment amongst Organization for Economic Co-operation and Development (O.E.C.D.) countries. (See Table 8.) This growth was mainly due to rapid population growth and demand for goods and services it generated. It has now slowed down and this will continue in the future as the population in the prime employment years declines and as growth in labour force participation rates levels off.

Canada's unemployment rate has been slowly increasing since the early 1970's. During the recession of 1982/83 it reached a peak of 12%. Despite the economic recovery, the seasonally adjusted rate stood at 9.7% in August, 1986 (Statistics

Canada, Bulletin 71-001, August, 1986). While unemployment rates can be expected to decline somewhat due to the decreasing growth rate of the labour force, projections to 1990 still suggest a rate above 9%, declining to 7.5% between 1990 and 2000 (Royal Commission on the Economic Union . . . Vol. 2, 1985, p. 62). The official unemployment rates underestimate the real rates of unemployment as people who may have given up looking for work or who are working part-time but wish full-time employment are excluded from official estimates.

Unemployment rates in Ontario have been consistently lower than the Canadian rate. This is primarily due to the broad base of Ontario's economy which makes it less vulnerable to declines in employment in specific industries. In August of 1986 the Ontario seasonally adjusted unemployment rate was 6.9%. Reflecting the strength of the economy and its large population base, Ontario has generated over 50% of new jobs in Canada since the end of the recession. Furthermore, new jobs created in Ontario are more likely to be full-time than in Canada as a whole.

Female participation in the labour force has continued to increase although at a slower pace. Between 1973 and 1985 the proportion of female workers has increased from 34% to 43% of the labour force. Women tend to be concentrated in the clerical, sales and service type of occupations.

Another trend has been the increase in part-time employment, especially in the service sector, among young people and female workers. In 1985, 16% of the labour force in Canada were part-time employees representing the fastest growing segment of the labour force. Statistics Canada defines part-time workers as those who work less than 30 hours per week, unless they consider themselves to be working full-time. A March 1986 Statistics Canada Labour Force survey showed that of the close to 2 million Canadians working part-time, approximately a quarter were looking for full-time work, but the remainder had personal or family responsibilities, were going to school or did not want full-time employment. While part-time employment is mutually beneficial to most workers and employees, a significant proportion are underemployed.

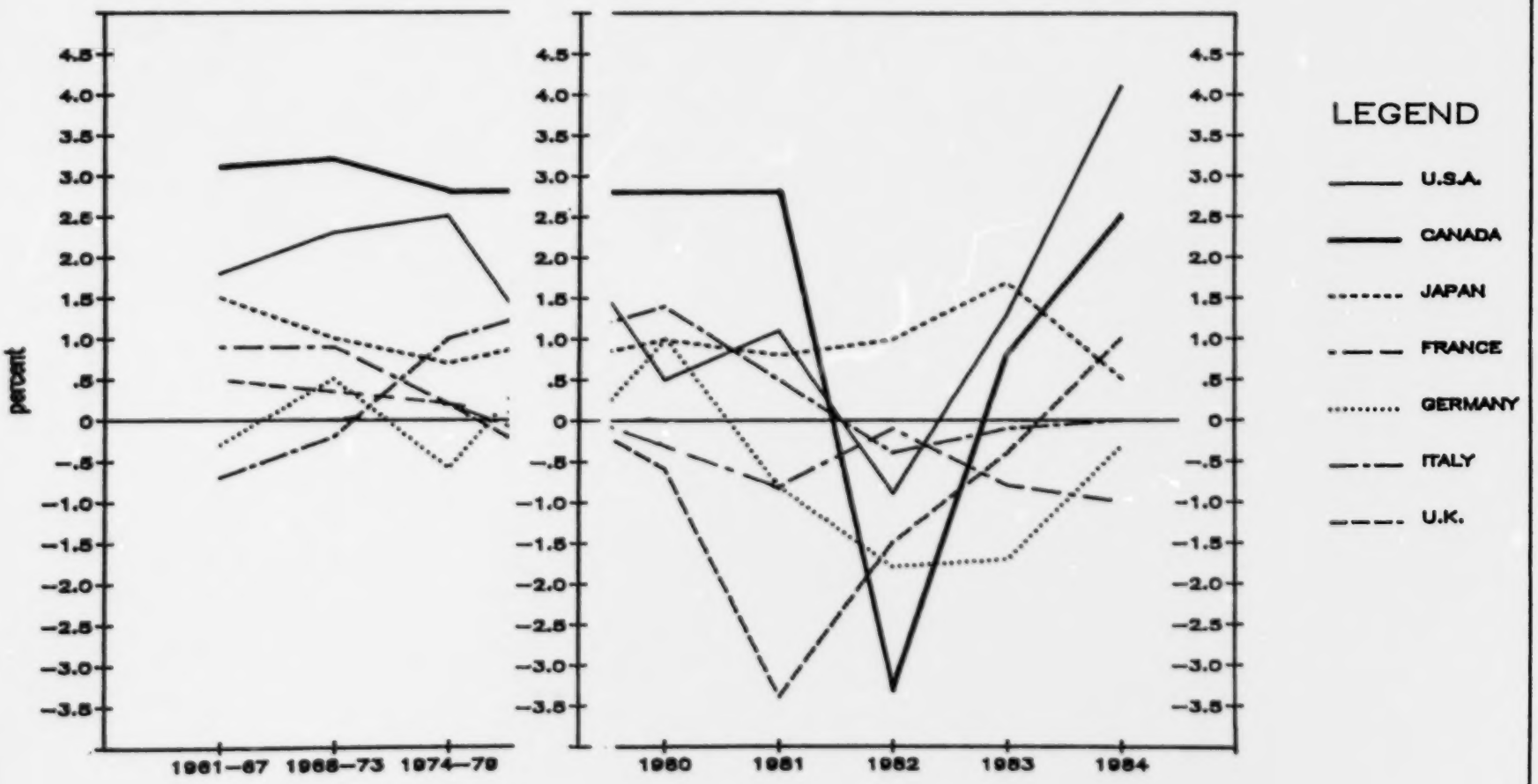
Table 8:

ANNUAL AVERAGE PER CENT GROWTH IN EMPLOYMENT IN CANADA AND MAJOR O.E.C.D. COUNTRIES

	1961-67	1968-73	1974-79	1980	1981	1982	1983	1984
Employment growth								
United States	1.8	2.3	2.5	0.5	1.1	-0.9	1.3	4.1
Japan	1.5	1.0	0.7	1.0	0.8	1.0	1.7	0.5
Germany	-0.3	0.5	-0.6	1.0	-0.8	-1.8	-1.7	-0.3
France	0.9	0.9	0.2	-	-0.8	-0.1	-0.8	-1.0
United Kingdom	0.5	-	0.2	-0.6	-3.4	-1.5	-0.4	1.0
Italy	-0.7	-0.2	1.0	1.4	0.5	-0.4	-0.1	0.0
Canada	**3.1**	**3.2**	**2.8**	**2.8**	**2.8**	**-3.3**	**0.8**	**2.5**
Total O.E.C.D.	1.0	1.2	1.1	0.6	0.4	-0.5	0.4	1.5

Source: Report of the Royal Commission . . . , op. cit. Vol. 1, p. 133

Graph 3: ANNUAL AVERAGE EMPLOYMENT GROWTH
MAJOR O.E.C.D. COUNTRIES



Source: Report of the Royal Commission....op.cit.V1.p134

Another interesting trend has been the increasing levels of self-employment. A study by Statistics Canada showed that self-employment has increased since the recession, in part due to unemployment and layoffs, but also as a result of increases in self-employment in the service sector, which had a relatively low rate of unemployment. Between 1979 and 1984, self-employment (including owners of incorporated businesses) increased from 12.0% of the labour force to 13.5% (Statistics Canada, 1985).

One of the concerns that has been raised about future employment trends is the tendency towards a bipolarization of occupations, i.e., growth in high paying and low-paying jobs with an accompanying decrease in jobs in the middle ground (Stanback, et al, 1981; Kuttner, 1983; Bluestone, 1982). Studies of workers displaced by plant closings have shown that upon finding new employment, workers are usually paid less than in their former position. Often newly created jobs, even in "high tech" industries, tend to be at the lower end of the wage scale. A recent study by the U.S. Bureau of Labour Statistics showed there was close to a $100 (U.S.) weekly gap between the fastest growing occupations compared to the most rapidly shrinking occupations (Kuttner, 1983).

Of particular concern is the high rate of youth unemployment (ages 15 to 24) which in 1985 was 13.2% for Ontario and 16.5% for Canada compared to 8.0% and 10.5% respectively for the labour force as a whole.

Since the recession, there has been a considerable increase in the incidence of long-term unemployment, i.e., those unemployed for one year or more. Between 1982 and 1985, total unemployment dropped but the number of persons unemployed for more than a year doubled (Statistics Canada, Bulletin 71-001, June, 1986).

3.6 Economic Growth

Between the Second World War and 1973, economic growth was unusually strong in Canada and was reflected in growing real incomes, healthy increases in productivity and low rates of inflation and unemployment. After the oil shock of 1973, the 1970's were marked by a slowdown in economic growth, rising rates of unemployment and inflation in Canada and other major industrialized countries.

Canada's annual growth in real gross domestic product fell from 5.7% for the period 1962-73 to 3.2% for the period 1974-79. Since then it has wavered from 1.0% in 1981 to -4.4% during the recession in 1982 to 4.7% in 1984. The early 1980's were marked by a deep recession accompanied by lower rates of inflation and high rates of unemployment.

Between 1974 and 1979, Ontario's gross domestic product increased at a somewhat lower rate than Canada as a whole 2.7%; however, since 1981, Ontario has exhibited a higher growth rate than the rest of Canada, reflecting recent difficulties encountered by resource-producing provinces. (See Table 9.)

Table 9:

GROWTH IN REAL G.D.P. IN CANADA AND ONTARIO 1974-1984

	Canada	Ontario
1974-79 annual avg.	3.2%	2.5%
1980	1.0	-.5
1981	3.4	2.6
1982	-4.4	-4.2
1983	3.3	5.5
1984	4.7	6.6

Source: Royal Commission . . ., op. cit., Vol. 1, p. 133, and special table from Ministry of Treasury and Economics

Long-term projections prepared for the MacDonald Commission reflect a slower growth rate to the turn of the century with an annual increase in real gross domestic product of 3.0% for the period 1984-1990 followed by a lower annual growth rate of 2.6% for the period 1990-2000 (Royal Commission . . . Vol. 2, p. 62). The slower growth rate in the 1990's was based on slower population growth and a slowing down of female participation in the labour force.

Recent economic studies have found that it is small firms that are responsible for a large proportion of the increase in employment and is probably the most dynamic sector of the business sector (Carmichael, 1985). A 1985 study by the Department of Regional Industrial Expansion found that over 60% of net jobs created between 1974 and 1984 were in firms of less than 100 employees. Still, large firms (with 500+ employees) also accounted for a large share of new jobs representing around 40% of net jobs created while medium-sized firms (100-499 employees) had a small net loss in jobs. As was pointed out by D.L. Birch in a recent article on who creates jobs in the United States, this trend will continue as we move from large-scale capital intensive companies to smaller-scale labour-intensive companies in the service sector.

A number of reports about Canada's prospects for growth have highlighted the need for Canada to be less dependent on exporting raw resources due to the boom and bust cycles of resource goods, the slower growth rate of resource industries and the emergence of other countries as producers of raw materials. **Therefore, our future strength will likely be more dependent on increasing industrial competitiveness, especially in high-technology industries, and expansion of trade in the service sector.** In recognition of the importance of improving our competitiveness, the Government of Ontario recently announced the establishment of a $1 billion technology fund for the next decade to support a variety of initiatives and joint ventures with the Federal government, universities and the private sector.

Although future job creation will be concentrated in the service industries, the manufacturing sector is likely to remain an important generator of wealth. Projections for employment growth in Ontario for the next decade (1985-1995), show that growth is expected to be concentrated in the following industries:

- Community, Business and Personal Services (52 % of growth)
- Trade (15% of growth)
- Construction (4% of growth)
- Transportation and Storage (4% of growth)
- Public Administration (3% of growth)
- Primary Metal and Metal Fabricating (3% of growth)

. Finance, Insurance and Real Estate (3% of growth)
(Ontario Task Force on Employment and New Technology, 1985, p. 149)

The above projection indicates that the service sector is expected to generate a total of 80% of all new jobs with community, business and personal services being the major contributor, followed by trade. Within the community, business and personal services industry, employment growth will be concentrated in services to business management (42% of growth), accommodation and food services (31%) and to a lesser extent, health and welfare services (12%) and amusement and vacation services (11%) (Ontario Task Force, Final Report, p. 147).

One sector of the economy with considerable potential for growth is the tourism industry. This sector generated export earnings of $3.8 billion in 1983 (compared to $4.0 billion for natural gas) (Tourism Canada, 1985, p. 68). Unfortunately, Canada is losing its market share of world travel receipts and has not been keeping up with the increase in international tourism. Both the Federal and Provincial governments are paying increasing attention to tourism in an effort to take advantage of the opportunities for growth in this sector in which Canada is so well positioned to compete.

A study by the Ontario Ministry of Treasury and Economics has noted that while Ontario is rapidly losing its comparative advantage in the export production of mass-produced goods and in primary commodities, it does have a comparative advantage in terms of its highly educated work force. **This means that in the goods producing sector we have the capacity to emphasize product innovation and the production of complex goods that require a high degree of flexibility and sophistication. In the service sector, we can export our advanced knowledge and expertise** (Ministry of Treasury and Economics, 1986, p. 19).

For example, Ontario Hydro's recently created New Business Ventures Division has been successfully marketing abroad by-products, research and development services, technical assistance, utility management, training and other specialized services. The Toronto Transit Commission has also created a subsidiary, Toronto Transit Consultants, Limited (T.T.C.L.) to market its expertise in design,

planning, management, operations and construction. T.T.C.L.'s international projects have been undertaken in countries such as Thailand, Malaysia, Mexico, Venezuela, the United States and Turkey.

FIGURE 2

THE TORONTO REGION AND THE TORONTO CENSUS METROPOLITAN AREA

THE METROPOLITAN TORONTO AND REGIONAL ECONOMY

4.0

4.1 Introduction

Although divided into separate administrative bodies, Metropolitan Toronto and the surrounding regional municipalities together form interdependent parts of an economic entity, the regional economy. This economy exhibits geographical differentiation in terms of functions and areas of specialization.

This section will begin with a general discussion of the Regional economy. The economy of Metropolitan Toronto will then be discussed within this context. The Toronto Region includes Metropolitan Toronto and the surrounding regional municipalities of York, Peel, Durham and Halton. (See Figure 2.) Much of the data for the Toronto Region will, however, be based on the Toronto Census Metropolitan Area as defined by Statistics Canada (due to availability of data). The C.M.A. is smaller than the Toronto Region and excludes Burlington, Whitby and Oshawa and other smaller municipalities.

4.2 The Economy of the Toronto Region

4.2.1 Introduction

The Toronto Region is the economic heartland of the country, accounting for nearly two out of every ten jobs in Canada and more than four of every ten jobs in Ontario. The Region is the financial and service centre of both Ontario and Canada and has a manufacturing sector which dominates both the province and the nation.

The importance of the Region's economy to both the Province and Canada is illustrated in Table 10. The regional employment exceeds the proportion of the population it represents of Ontario and Canada in most sectors of the economy. In particular, the Toronto C.M.A. has 21.5% of Canada's employment in manufacturing, 19.0% in trade and 27% in finance, insurance and real estate.

Table 10:

TORONTO C.M.A. EMPLOYMENT AND POPULATION AS PERCENTAGE OF ONTARIO'S AND CANADA'S 1985

	Ontario	Canada
Employment		
Manufacturing	41.8	21.5
Construction	42.8	18.0
Transportation, Communications and Utilities	40.6	13.8
Trade	46.4	19.0
Finance, Insurance and Real Estate	61.0	27.0
Community, Business and Personal Services	42.8	16.6
Goods Producing	40.8	19.2
Service Producing	42.9	16.6
Total	42.3	17.3
Population	35.1	12.5

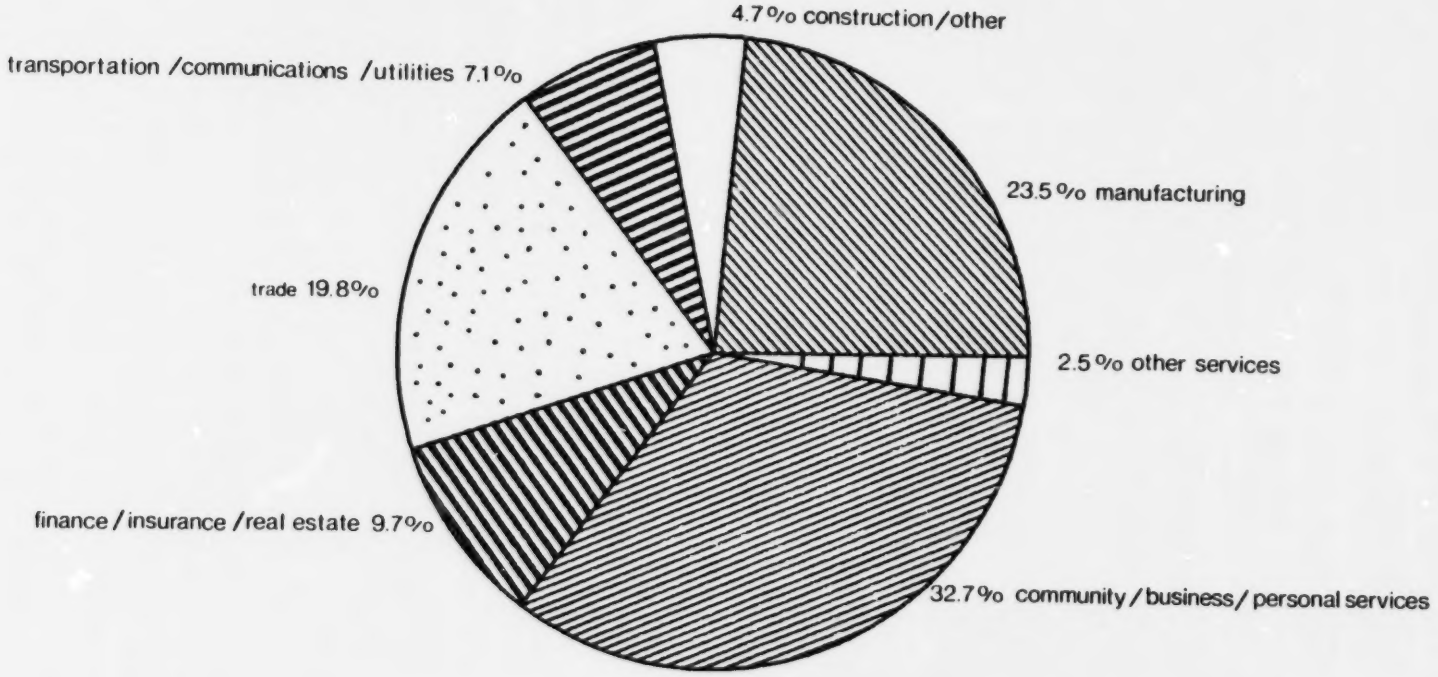
Source: Statistics Canada Catalogues 72-002, 91-210, 91-211, 1985.

There are differing views as to the force for economic growth in the Toronto Region. The predominant viewpoint emphasizes the role of the manufacturing sector. Although manufacturing is no longer the key generator of employment, the manufacturing sector's influence extends to other sectors of the Region's economy. For example, a significant number of office jobs in head offices of manufacturing firms are located in the Toronto Region. Manufacturing is also one of the most important users of services. As indicated in a previous section, the health of the service sector is directly related to the health of the manufacturing sector. In addition, manufacturing has a multiplier effect stimulating growth in the rest of the economy.

The development of the Region, however, may also be viewed as centering on the financial and investment sectors located within Metropolitan Toronto, especially the Central Area. They have a high multiplier effect attracting both service and manufacturing firms which require high level financial-investment services. Furthermore, the role of the service sector in today's economy goes considerably beyond being that of just a by-product of manufacturing; a large proportion of distributive and producer services also goes to industries in the service sector.

Graph 4:

DISTRIBUTION OF EMPLOYMENT BY INDUSTRY TORONTO C.M.A. (1985)



Source: Statistics Canada #72-002, 1985

4.2.2 Employment Structure and Growth

As with the economy as a whole, the service sector dominates the regional economy accounting for over 70% of jobs in 1985. Still, manufacturing is a major employer and generator of wealth, accounting for approximately one in four jobs in the Region. Table 11 provides a profile of employment in the Toronto C.M.A.

Table: 11

EMPLOYMENT BY INDUSTRY FOR THE TORONTO C.M.A., 1985

	Number of Employees	%
Manufacturing	367.3	23.5
Construction	70.2	4.5
Other	3.7	.2
Goods Producing Sector	**441.2**	**28.2**
Transportation, communications and other utilities	111.4	7.1
Trade	309.7	19.8
Finance, Insurance and Real Estate	151.5	9.7
Community, business & personal service	510.5	32.7
Other Services	38.3	2.5
Service Producing Sector	**1 121.4**	**71.8**
Total	1 562.6	100.0

Source, Statistics Canada Catalogue 72-002, 1985.

The largest industry is represented by community, business and personal services which account for nearly one in every three jobs in the Toronto C.M.A. This category includes such services as education, health and welfare, amusement and recreation, services to business management, restaurants and accommodation and food services.

The Toronto area has become the financial and corporate centre of Canada (Semple and Green, 1983). Approximately 40% of the head offices of the top 500 Canadian companies are located in the Toronto Region. It is the most likely location of firms that want access to the national and international market. Most major financial institutions as well as the largest stock exchange in Canada are located here.

Table 12:

CHANGES IN EMPLOYMENT BY INDUSTRY METROPOLITAN TORONTO AND TORONTO C.M.A.

	1971					1981					% Change 1971-81		
	Metro	%	Toronto C.M.A.	%	Metro % of C.M.A.	Metro	%	Toronto C.M.A.	%	Metro % of C.M.A.	Metro	Toronto C.M.A.	Prop. Growth in Metro
All Industries	958 579	(100)	1 163 240	(100)	(82)	1 280 270	(100)	1 679 415	(100)	(76)	(33.6)	(44.4)	(62)
Primary Industries	3 860	(.4)	10 840	(.9)	(36)	5 910	(.5)	13 790	(.8)	(43)	(53.1)	(27.2)	(69)
Secondary Industries													
Manufacturing Industries	252 295	(26.3)	323 205	(27.8)	(78)	291 245	(22.7)	409 705	(24.4)	(71)	(15.4)	(26.8)	(45)
Construction	58 590	(6.1)	72 685	(6.2)	(81)	60 935	(4.8)	87 225	(5.2)	(70)	(4.0)	(20.0)	(16)
Service Industries													
Transport & Communications and Utilities	76 290	(8.0)	94 415	(8.1)	(81)	101 515	(7.9)	141 440	(8.4)	(72)	(33.1)	(50.0)	(54)
Trade	176 870	(18.5)	208 260	(17.9)	(85)	224 570	(17.5)	307 205	(18.3)	(73)	(27.0)	(47.5)	(48)
Finance, Insurance and Real Estate	78 925	(8.2)	84 595	(7.3)	(93)	129 285	(10.1)	144 715	(7.7)	(89)	(63.8)	(71.1)	(84)
Community, Business and Personal Services	254 105	(26.5)	294 790	(25.3)	(86)	392 945	(30.7)	487 655	(29.0)	(81)	(54.6)	(65.4)	(72)
Public Administration and Defence	57 635	(6.0)	64 840	(5.5)	(89)	73 865	(5.8)	87 680	(5.2)	(84)	(28.2)	(35.2)	(71)

Source - 1971: . Census 94-744 Table 10
Economic Characteristics, Labour Force, Industries
. Census 94-742 Table 6

1981: . Census 93-966 Table 24/Table 20 + Appendix B

The service sector has been the fastest growing sector of the Region's economy with particularly high growth rates in the finance, insurance and real estate industries and in community, business and personal services. (See Table 12.) Although certain industries within the service sector are moving out to service the growing population in the fringe municipalities, growth in this sector has centred in Metropolitan Toronto. Metro accounted for two-thirds of growth in employment in the service sector in the Toronto C.M.A. during the period 1971-1981 (compared to 45% in manufacturing).

The major manufacturing industries in the Toronto C.M.A. are: metal fabricating, food and beverage, electrical products, transport equipment, printing and publishing and miscellaneous manufacturing. (See Table 13.) These industries account for close to 60% of all manufacturing employment. In the fringe municipalities transport equipment, metal fabricating, electrical products, machinery and miscellaneous manufacturing predominate whereas inside of Metro, the largest industries are food and beverages, printing and publishing, electrical products, metal fabrications and miscellaneous manufacturing.

Table 13:

MAJOR MANUFACTURING INDUSTRIES AS A PROPORTION OF TOTAL MANUFACTURING EMPLOYMENT, TORONTO C.M.A., METROPOLITAN TORONTO AND FRINGE 1981

	Toronto C.M.A.	Metropolitan Toronto	Fringe
Metal Fabricating	10.9%	9.7%	13.7%
Food and Beverages	10.1	12.2	*
Electrical Products	9.8	9.9	9.4
Transport Equipment	8.9	6.2	15.6
Printing and Publishing	9.5	11.2	5.4
Miscellaneous	7.9	8.2	7.1
Machinery	*	*	8.7
	57.1%	57.4%	59.9%

* Employment not among major industries.

Source: Statistics Canada, Derived from Table 17.

As shown in Table 12, between 1971 and 1981 manufacturing employment increased at a much more modest pace than the service sector. During the recession, manufacturing declined by 10% and has continued to decline despite the economic recovery. A total of 23 800 manufacturing jobs in the Toronto C.M.A. were lost during the period May 1983-1985.

This decline has been due to plant closings and "downsizing" to eliminate excess capacity and is a result not only of the recession but also of increased foreign competition and rationalization of production by international companies. Although Metro Toronto is still the major location of manufacturing firms, there has been a growing trend for such companies to locate in the fringe municipalities.

During the period 1976-1985 the Toronto C.M.A. experienced an annual rate of employment growth of 3% to 4%, except in the early 1980's during the recession when there was a decline in employment. Since the end of the recession, during the period May 1983 to May 1985, the Toronto C.M.A. has witnessed an annual growth of employment of 58 000 jobs (Statistics Canada, Catalogue 72-002). This is slightly higher than the average annual growth rate of 52 000 for the period 1971-1981 and reflects the economic recovery.

Because of its diversified economy, the Toronto Region has been able to weather economic downturns better than most other areas within the country. The most recent unemployment rate for the Toronto C.M.A. is 5.9% compared to 6.5% for Ontario and 9.0% for Canada (not seasonally adjusted, Statistics Canada, June, 1986).

Along with the shift of population growth outside of Metropolitan Toronto to the surrounding municipalities, there has also been a movement of employment. While employment in Metropolitan Toronto accounted for 82% of all jobs in the Toronto C.M.A. in 1971, by 1981 this had fallen to 76%. Of the increase of just over half a million jobs during this period, almost 40% occurred outside of Metro.

4.2.3 Prospects for Growth

Long-range economic growth projections are not available for the Toronto Region. However, a medium term projection prepared for the Toronto C.M.A. to 1990 shows that the real Gross Domestic Product is likely to grow by approximately 2.0% annually between 1987 and 1990 (Municipality of Metropolitan Toronto, Office of the Chairman, p. 4). This lower rate of growth follows three years of strong economic performance and mirrors the slower growth rate predicted by the Conference Board of Canada for Ontario and Canada.

Long-term projections are available for the population and labour force in the Toronto Region. These projections are derived from a model used by the Metropolitan Toronto Planning Department which takes into account both demographic changes and the availability of land for housing.

The population in the Toronto Region is expected to grow from 3.4 million in 1981 to 4.7 million in 2011. The average annual rate of population growth is projected to continue to decline from 1.4% for the 1981-91 period to 1.0% for the 1991-2001 period and .8% in the 2001-2011 period. Most of the population growth is expected to occur outside of Metropolitan Toronto in the surrounding Regional Municiplities, although the number of households in Metro is expected to increase substantially during the projection period.

It is projected that there will be slower rates of immigration and continued lower birth rates accompanied by an aging population. Between 1981 and 2011, persons 65 years or more are projected to increase from 11% of the population to 20% in Metro and from 6% to 14% outside of Metro.

The aging of the population within Metro will probably offset the increase in those persons likely to participate in the labour force. This will likely result in a relatively stable employed labour force within Metro while the employed labour force residing outside of Metro is expected to double between 1981 and 2001. In 1981 Metropolitan Toronto provided over 60% of the employed labour force in the Toronto Region; by 2011 this will have declined to just under 50%. (See Table 14.)

Table 14: **POPULATION AND LABOUR FORCE PROJECTIONS 1981-2011 TORONTO REGION**

	1981		1991		2001		2011	
	Population	Employed Lab. Force	Population	Employed Lab. Force	Population	Employed Lab. Force	Population	Employed Lab. Force
Metro Toronto	2 137 000	1 158 000	2 184 000	1 215 000	2 187 000	1 193 000	2 194 000	1 175 000
Durham	284 000	136 000	343 000	165 000	402 000	196 000	459 000	218 000
York	252 000	129 000	394 000	201 000	515 000	268 000	613 000	311 000
Peel	491 000	263 000	692 000	375 000	871 000	482 000	1 035 000	564 000
Halton	254 000	131 000	296 000	149 000	332 000	170 000	368 000	183 000
Four Regions	1 281 000	659 000	1 725 000	890 000	2 120 000	1 116 000	2 475 000	1 276 000
Toronto Region	3 418 000	1 817 000	3 909 000	2 105 000	4 307 000	2 309 000	4 669 000	2 451 000

Source: Metropolitan Toronto Planning Department, Metro Facts: Small Area Projections to 2011, June 1986

Providing long-term projections for employment can be somewhat problematic as they are dependent on a number of factors which are difficult to quantify, such as the effect of automation, changes in trading patterns and changes in inflation.

The medium term projection prepared by the Conference Board from 1986 to 1990 reflected an average annual increase in employment of 3.0% for the Toronto C.M.A. with an unemployment rate falling to 3.7%. This projection, while based on Canadian and Ontario forecasts, took into account differences in industrial composition within the Toronto C.M.A.

Employment projections have also been prepared by the Metropolitan Toronto Planning Department for the period 1981-2011. These have been developed using two different methodologies. The first was based on the assumption that the employed labour force for the Toronto Region would equal employment in the Toronto Region and that distribution of jobs would be based on trends in journey to work patterns between Metropolitan Toronto and the Four Regional municipalities (Metropolitan Toronto Planning Department, 1984). The second projection developed a detailed employment estimate for Metropolitan Toronto based on availability of land, development proposals, patterns of growth by traffic zone and previous growth trends for various industries. A similar but less detailed approach was used to project employment for the surrounding regions.

The projections resulting from the two methods are not significantly different. Table 15 shows the employment projections based on the traffic zone model. The average annual growth rate in employment for the Toronto Region for the period 1981-1991 is 2.5% declining to 1.2% for the period 1991-2001 and to .9% for the period 2001-2011. The first ten-year projection is slightly lower than the average annual growth rates for the medium term for the Toronto C.M.A., as noted above.

Graph 5: PROJECTED JOBS AND LABOUR FORCE
METRO TORONTO & 4 SURROUNDING REGIONS
1981, 2001, 2011

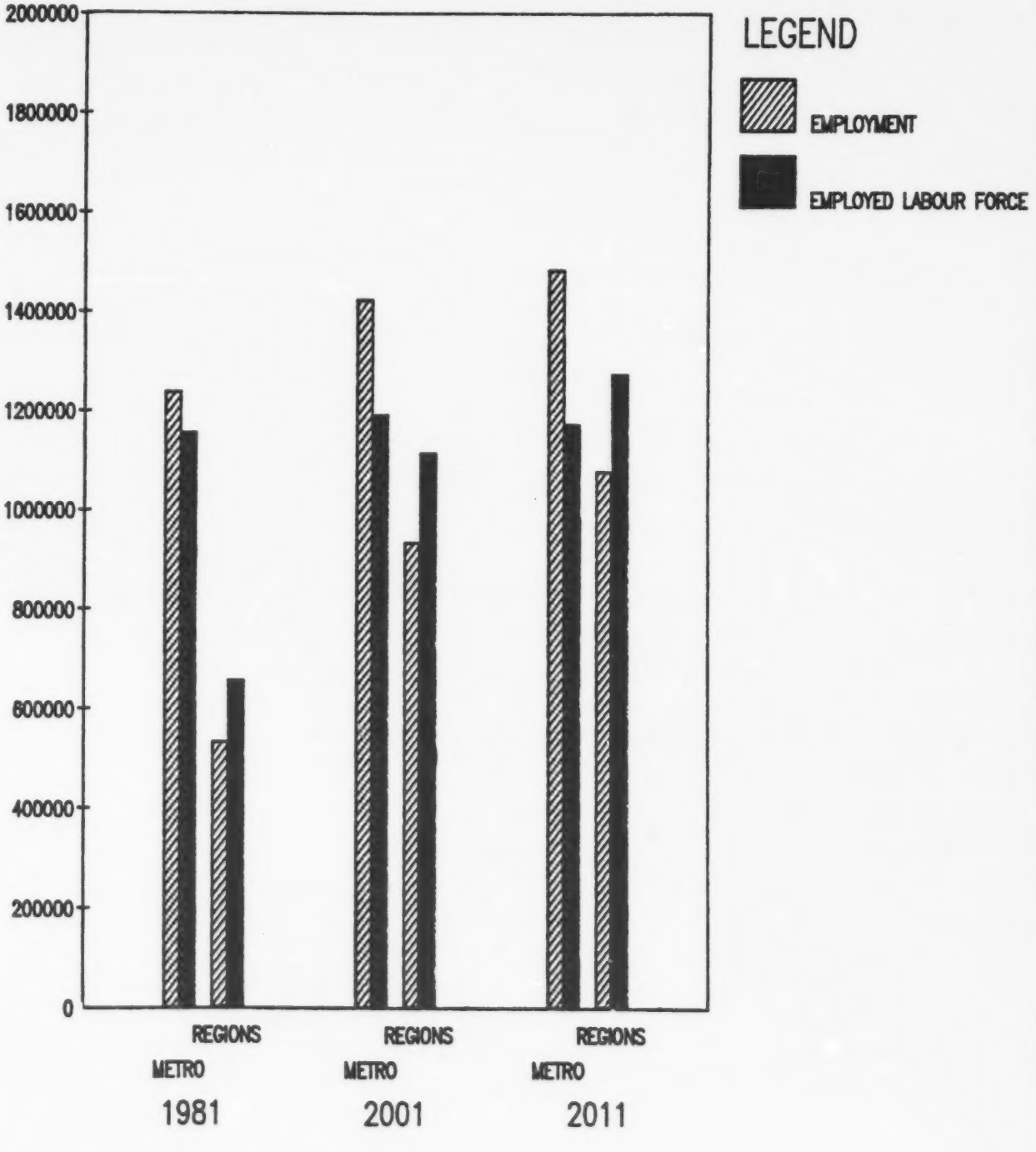


Table 15:

EMPLOYMENT PROJECTIONS FOR THE TORONTO REGION

	1981	1991	2001	2011
Metropolitan Toronto	1 240 000 (69.8%)	1 338 000 (63.6%)	1 424 000 (60.3%)	1 485 000 (57.9%)
Four Regions	536 000 (30.2%)	765 000 (36.4%)	936 000 (39.7%)	1 080 000 (42.1%)
Toronto Region	1 776 000 (100.0%)	2 103 000 (100.0%)	2 360 000 (100.0%)	2 565 000 (100.0%)

Source: Metropolitan Toronto Planning Department, Metro Facts: Small Area Projections, 1986, p. 10

As Table 15 demonstrates, employment is projected to increase at a faster rate outside of Metro. Thus, between 1981 and 2011 employment in Metro is expected to increase by over 200 000 jobs while outside of Metro it is expected to increase by just over 500 000. Assuming present residential patterns, the anticipated increase in employment inside of Metro combined with a relatively stable labour force will result in increased commuting into Metro.

Long-term projections are not available on an industry basis for the Toronto Region. However, medium term projections to 1990 for the Toronto C.M.A. prepared by the Conference Board suggest that over three-quarters of the employment growth will take place in the service sector. Still, the manufacturing sector is expected to continue to grow at a strong rate over the medium term with an average annual growth rate of 3.0% compared to 3.2% in the service sector. Over the longer term, however, the manufacturing sector is likely to have slow or no growth with possible declines in employment due to higher levels of automation while employment in the service sector can be expected to continue to grow. The full effect of automation in the service sector is not yet known and will require monitoring of trends and review of employment projections.

In manufacturing, the Toronto Region is becoming one of the most important centres for the production of automobiles and parts in North America as evidenced by heavy investments by American Motors, Ford, General Motors and several Japanese and Korean producers. This expansion may stimulate the economy by attracting labour and increasing business for Toronto area parts suppliers (Canada Employment and Immigration Commission, 1985). Nevertheless, in the long run the auto industry could be in trouble, as foreign producers, not bound by auto pact controls on Canadian content, increase their share of the Canadian market which is expected to grow more slowly over the next ten years (Werner, June, 1986). Another critical area of growth is in high technology industries, especially in computers, components and telecommunications equipment.

Within the service sector, the Toronto Region is likely to follow those trends identified at the Provincial level discussed previously, i.e., strong growth in community, business and personal services, moderate growth in trade and slower growth in the financial, insurance and real estate sectors. Within the community, business and personal service sector, employment growth will probably be concentrated in services to business management and accommodation and food services.

4.3 The Economy of Metropolitan Toronto

4.3.1 Introduction

Metropolitan Toronto functions as the predominant national financial centre and major administrative centre for large corporations in Canada. Of the top 500 firms listed in a 1986 Financial Post report, approximately a third have their head offices in Metropolitan Toronto. Metro has a diversified economy with a strong service and manufacturing sector, although it is the service sector which predominates.

The diversity of employment opportunities continues to attract new residents to Metro and provides the municipality with relative stability during economic downturns. The economy exhibits a high level of growth and innovation which benefits the Region as a whole.

4.3.2 Employment Structure and Growth

In 1981, 72% of all jobs in Metro were in the service sector, as shown in Table 12, based on Statistics Canada's Standard Industrial Classifications (S.I.C.). Manufacturing accounted for 23% of jobs at that time and construction represented 5%. Between 1971 and 1981, employment in Metro Toronto grew from 959 000 to 1 280 000 - an increase of 34%. The highest growth rates were exhibited by the finance, insurance and real estate sectors and community, business and personal services at 64% and 55% respectively. Manufacturing on the other hand grew at a much slower rate of 15%.

A more recent employment profile is available from the Metropolitan Toronto Planning Department and is based on a land use activity classification system. Using this classification system, "office" was the major category, accounting for 42% of total employment in 1985. The next largest category was manufacturing and warehousing which represented 22%. Institutional, retail and service (personal services, restaurants, hotels, etc.) each accounted for approximately a tenth of total employment.

Table 16:

TOTAL EMPLOYMENT BY MAJOR CATEGORY, 1981-1985, METROPOLITAN TORONTO

	1981		1985		% Change 1981-85
Office	462 576	39.3%	495 520	41.8%	7.1%
Manufacturing/ Warehouse	288 613	24.5	257 390	21.7	-10.8
Institutional	132 276	11.2	139 674	11.8	5.6
Retail	143 122	12.1	136 733	11.6	-4.5
Service	128 808	10.9	128 445	10.9	-.3
Other	22 789	1.9	26 451	2.2	16.1
Total	**1 178 184**	**100.0%**	**1 184 213**	**100.0%**	**.5%**

Source: Metropolitan Toronto Planning Department

Between 1981 and 1985, employment in Metro Toronto remained virtually unchanged, reflecting the 1982-83 recession. Manufacturing employment fell by 10% and retail employment by 5%. It was primarily office related employment that has increased during this time period.

A recent phenomenon has been the increase in part-time employment. Part-time employment now represents 12% of all jobs in Metro and is concentrated in the retail, service and institutional industries. Since the end of the recession in 1983, part-time employment has accounted for almost half of new jobs created. This is probably a reflection of where growth is occurring (service, retail) but also a desire on the part of employers to run "leaner" establishments.

A breakdown of full-time office employees into various categories is available from the 1985 Metro Planning employment survey. The largest category of office workers are employed by banks, investment dealers, insurance companies and real estate companies (22%), followed by transportation, construction and resource production companies (15%), various levels of government (14%), other business services (13%), trade and personal services (8%), and manufacturing (8%).

Although decentralization of office space is occurring, office space continues to be concentrated in the City of Toronto, especially in the Central Area. It is the downtown area to which head offices, major financial institutions and large business services such as legal and advertising continue to be attracted. (The spatial distribution of office activity will be discussed in more detail in Section 6.2).

Metro Toronto, in addition to being a national corporate, financial and service centre is also a major national and international tourist attraction. Recent data indicates that in the peak holiday time during the summer months, half of all visitors to Toronto came from the United States, approximately a tenth are from other countries and 40% are from within Canada (Metropolitan Toronto Convention and Visitors Association, 1985). It has been reported that Metro Toronto is the major recipient of tourism demand in Canada accounting for over a tenth of Canada's tourism revenue in 1982 (Camp Associates, 1985). About 10% of employment in Metropolitan Toronto is supported by tourist expenditures

(Steering Committee on Economic Development, 1980, p. 35). Tourism provides revenue to the accommodation, food and beverage and arts and entertainment industries.

Although the number of tourists visiting Toronto increased at a compound rate of 5%-6% during the 70's, there was a slump in tourism in the early 80's. Hotel occupancy is up from the low levels of 1982 and 1983 and this, along with other indicators, suggests tourism is once again growing. In part, this growth can be attributed to the marketing compaign by Metropolitan Toronto which targetted tourism for promotion. As was stated earlier, this sector of the economy has considerable potential for growth.

Manufacturing continues to be a major employer in Metro although this sector was particularly affected by the recession and has not yet reached its pre-recession level. The major manufacturing industries in Metro in order of number of persons employed are: food and beverage (12%), printing and publishing (11%), electrical products (10%), metal fabricating (10%), miscellaneous (8%), chemicals (6%), transportation equipment (6%), clothing (6%), furniture (5%) and paper products (5%). (See Table 17.)

Between 1975 and 1980, close to 14 000 production jobs were lost in Metro (Gardner, 1983, p. 32). These losses occurred in metal fabricating, miscellaneous manufacturing, electrical products, machinery and clothing. During the same period transportation equipment, knitting and food and beverage showed employment increases.

Between 1971 and 1981, the proportion of industrial employment in the Toronto C.M.A. located in Metro declined from 78% to 71%. Of the growth in manufacturing employment in the Toronto C.M.A., 45% was located in Metropolitan Toronto.

Data gathered on the movement of firms has shown that the majority of such movements were within Metro (Gardner, 1983, p. 42). Businesses which moved out of Metro to the fringe tended to be in electrical products, metal fabricating

Table 17:

EMPLOYMENT IN MANUFACTURING INDUSTRIES IN METROPOLITAN TORONTO AND TORONTO, C.M.A. 1971-1981

	1971					1981					% Change 1971-81		
	Metro	%	Toronto C.M.A.	%	Metro as % of Toronto C.M.A.	Metro	%	Toronto C.M.A.	%	Metro as % of Toronto C.M.A.	Metro	Toronto C.M.A.	Metro as % of C.M.A.'s Total Growth
Manufacturing Industries													
Food & Beverages	30 110	(11.9)	33 210	(10.3)	(91)	35 525	(12.2)	41 455	(10.1)	(86)	(18.0)	(24.8)	(66)
Tobacco	970	(0.4)	1 245	(0.4)	(77)	1 195	(0.4)	1 520	(0.4)	(79)	(23.2)	(22.1)	(82)
Rubber & Plastics	8 745	(3.5)	11 475	(3.6)	(76)	11 995	(4.1)	18 280	(4.5)	(66)	(37.2)	(59.3)	(48)
Leather	4 035	(1.6)	5 200	(1.6)	(78)	4 545	(1.6)	5 250	(1.3)	(87)	(12.6)	(1.0)	(100)
Textiles	5 585	(2.2)	6 620	(2.0)	(84)	6 840	(2.3)	9 605	(2.3)	(71)	(22.5)	(45.1)	(42)
Knitting	2 505	(1.0)	2 655	(0.8)	(94)	3 480	(1.2)	3 600	(0.9)	(97)	(38.9)	(35.6)	(100)
Clothing	13 365	(5.3)	13 565	(4.2)	(99)	17 240	(5.9)	18 005	(4.4)	(96)	(29.0)	(32.7)	(87)
Wood	1 965	(0.8)	3 095	(1.0)	(63)	2 540	(0.9)	5 275	(1.3)	(48)	(29.3)	(70.4)	(26)
Furniture	8 100	(3.2)	9 520	(2.9)	(85)	13 260	(4.6)	18 045	(4.4)	(73)	(63.7)	(90.0)	(30)
Paper	13 165	(5.2)	15 545	(4.8)	(85)	13 410	(4.6)	17 975	(4.4)	(75)	(1.9)	(15.6)	(10)
Printing & Publishing	28 590	(11.3)	31 135	(9.6)	(92)	32 505	(11.2)	38 910	(9.5)	(84)	(13.7)	(25.0)	(50)
Primary Metals	6 500	(2.6)	8 515	(2.6)	(76)	4 790	(1.6)	8 290	(2.0)	(58)	(-26.3)	(-2.6)	(0)
Metal Fabricating	26 890	(10.7)	34 390	(10.6)	(78)	28 225	(9.7)	44 460	(10.9)	(63)	(5.0)	(29.3)	(13)
Machinery	18 885	(7.5)	22 920	(7.1)	(82)	16 425	(5.6)	26 790	(6.5)	(61)	(-13.0)	(16.9)	(0)
Transport Equipment	9 820	(3.9)	29 920	(9.3)	(33)	18 055	(6.2)	36 610	(8.9)	(49)	(83.9)	(22.4)	(100)
Electrical Products	26 030	(10.3)	35 120	(10.9)	(74)	28 885	(9.9)	39 980	(9.8)	(72)	(11.0)	(13.8)	(59)
Non-metallic Minerals	6 520	(2.6)	10 325	(3.2)	(63)	5 995	(2.1)	10 700	(2.6)	(56)	(-8.1)	(3.6)	(0)
Petroleum & Coal Products	3 150	(1.2)	4 735	(1.5)	(67)	4 060	(1.4)	5 960	(1.5)	(68)	(28.9)	(25.9)	(74)
Chemicals	16 505	(6.5)	20 115	(6.2)	(82)	18 400	(6.3)	26 765	(6.5)	(69)	(11.5)	(33.1)	(28)
Miscellaneous	20 805	(8.2	23 905	(7.4)	(87)	23 860	(8.2)	32 235	(7.9)	(74)	(14.7)	(34.8)	(37)
	252 240*	(100)	323 210	(100)	(78)	291 230	(100)	409 710	(100)	(71)	(15.5)	(26.8)	(45)

* Difference due to rounding

Source - 1971: . Census 94-744 Table 10
Economic Characteristics, Labour Force, Industries
. Census 94-742 Table 6

1981: . Census 93-966 Table 20/Table 20 + Appendix B

opportunity to own their property appear to have been major reasons for companies moving to the fringe.

Within Metropolitan Toronto, the heaviest concentration of manufacturing and warehousing employment is in North York (65 000) followed by Etobicoke, (53 500), Toronto (50 800), Scarborough (43 300), York (9 700) and East York (10 300).

The majority of manufacturing employment in Metro is in medium or larger sized firms (more than 50 employees) which account for over 70% of all manufacturing employment in Metro (Metropolitan Toronto Planning Department, 1986). Still, smaller firms have been contributing significantly to the creation of new employment growth. Between 1977 and 1981, 61% of employment created by net new firms (new firms minus closures) was in companies with fewer than 50 employees. Large firms with 200+ employees accounted for 31% of employment in net new firms (Gardner, p. 41).

Metro has been identified as the major centre for high tech industry in Canada. (Miller, 1986) Using a standard based on the proportion of staff that are scientific, engineering or technical graduates or the proportion that industries spend on research and development, Metro has some 400 high tech manufacturing and 1 200 service firms and is just ahead of Montreal. Metro's mix of scientific and private and public research enterprises, universities, available venture capital and the high level of urban amenities (social and cultural facilities) will likely continue to make Metro a suitable location for high technology companies.

4.3.3 Prospects for Growth

Medium term projections prepared for the Toronto C.M.A. based on the Conference Board projections indicated moderate growth in all sectors of the economy. Separate projections prepared by the Metropolitan Toronto Planning Department have been developed for the period 1985 to 2011 based on a traffic zone model which took into account availability of land, known proposals, past patterns of growth and expectations of area municipalities. (See Table 18.)

In the medium term (to 1991) the Planning Department's overall employment projections provide for an average annual growth rate of 2.2% - just a bit lower than the projected growth rate for the Toronto C.M.A. In the following two ten-year periods the average annual growth rate in employment in Metro is projected to drop off considerably to .6% and .4% for the periods 1991 to 2001 and 2001 to 2011. The slower rate of employment growth reflects to some extent national and provincial trends. However, the even slower rate of growth projected for Metro is based on the limited availability of land for expansion.

Almost 80% of the employment growth projected for Metro is in the "office" employment category with small increases in other categories. This reflects strong growth projected for the service sector, especially in services to business management and the continued movement of head offices to Metro Toronto. The trade industry and the finance, insurance and real estate industries are, however, expected to grow at much slower rates than in the past. Expansion is also expected in the accommodation and food service sector, although this growth may depend to some extent on the success of various levels of government in promoting tourism.

It is difficult to predict the overall impact of technology on the level of employment. Increasing productivity will tend to inhibit growth in employment and result in employment declines in many industries. The areas where this impact is most likely to be felt are the manufacturing sector, business services, miscellaneous and food services and communications and utilities. Rapid technological changes could occur in the finance and insurance sectors but declines in employment may not show up till the early 1990's.

During the latter half of the 1970's, the rate of annual assessment growth in Metro varied between 2.1% to 3.5%. Since 1980, the annual assessment growth rate has varied between .7% to 3.8%. This decline in the rate of growth in assessment may be cause for concern given the likely additional costs required to provide service to a population that is aging, becoming increasingly polarized in terms of incomes and will be feeling the brunt of technological change.

The Metro Toronto Planning Department projects a continuing decline in manufacturing employment to the year 2011. Projections prepared for the Toronto C.M.A. using Conference Board data indicate that in the nearer future, employment in manufacturing within Metro could increase. The continued expansion of the auto industry in the Toronto Region may stimulate Toronto area parts suppliers. Metal fabricating may show a modest increase. Employment in other manufacturing companies in the near future can be expected to remain stable or decline slightly.

New manufacturing companies requiring larger sites are likely to seek sites outside of Metro while companies in Metro with large, sunk capital can be expected to try to upgrade existing facilities. **Metro will probably continue to perform an important role as a centre for industry in the Toronto Region.**

Metro provides a location for innovation and creativity in manufacturing and in other fields, such as communications, advertising, engineering and medical research. It is this innovation and creativity and the inter-action amongst various sectors of the economy which produces economic vitality and growth. As was stated earlier, Metro is in an excellent position to develop its high technology manufacturing and service industries.

Metropolitan Toronto is well positioned to adapt to the ongoing trend towards the service sector. It has a comparative advantage in attracting higher order services and research functions because of its high quality environment, including cultural and entertainment facilities, and its university and research institutions. Its role as a financial centre of international stature will likely continue to attract related business activity.

Table 18:

EMPLOYMENT PROJECTIONS, METROPOLITAN TORONTO
1985-2011

	Office	Retail	Service	Factory Warehouse	Institutional	Footloose	Total
1985	495 500	136 700	147 100	257 400	140 200	6 500*	1 184 000
1991	596 700	146 500	162 900	248 500	150 800	32 500	1 337 900
2001	670 800	148 100	175 800	239 000	165 400	24 600	1 423 700
2011	729 000	146 600	186 000	229 700	175 400	18 900	1 485 600
1985-2011 Change	233 500 (78%)	9 900 (3%)	38 900 (13%)	-27 700 (-9%)	35 200 (11%)	12 400 (4%)	301 600 (100%)

* This employment category was undercounted in 1985, hence large increase in 1991.

Source: Metropolitan Toronto Planning Department, 1986
Traffic Zone Model Projections

SOCIAL IMPLICATIONS

5.0

The diffusion of new technology and the changing economic structure are resulting in significant social changes. A continuation and acceleration of these trends has the potential to lead to additional and more pronounced social implications. These trends are reviewed below in relation to their impact on the employment pattern, income distribution, women, education and housing.

5.1 Employment Pattern

(1) Job Displacement

As noted in previous sections of this report, the economic and technological changes we are experiencing are leading to job displacement and increased unemployment in certain sectors of the economy. Job displacement appears to affect specific segments of the labour market: women, youth, workers entering the labour force, older workers and those with low level skills. However, routine professional work and managerial jobs are not immune to the effects of new technology. Although the technological changes experienced in the past have led to the creation of new jobs to replace those lost in the declining sectors, it is thought that the employment challenge confronting us today is of a different kind from that of the past. The potential for automation to reduce labour demand will likely lead to short-term transitional difficulties and likely long-term structural unemployment, unless remedies are found.

(2) Work Time

Part-time employment represents the fastest growing segment of the labour force. The proportion of part-time employment has increased from 10% of total employment in Metropolitan Toronto in 1983 to 12.4% in 1985. Similar trends at the national and provincial levels indicate that work time is changing. While this is partly due to workers' choice of a more flexible lifestyle, the strongest factor appears to be employers' response to economic and technological pressures. For example, the adoption of the

"just-in-time" system in manufacturing may lead some companies to hire staff on a part-time basis to meet production runs. Part-time employment is more prevalent in service industries.

Certain sectors such as banks, trust companies and retailing, and specific occupations such as service, sales and clerical work have a higher level of part-time employment. A continuation of this trend raises concern as to the distribution of work time and its effect on the nature and level of employment and the choice available to the labour force. It may result in a decline in incomes which could exacerbate the problem of housing affordability and increase the demand for social services. These workers may have to be employed at more than one job.

5.2 Income Distribution

Changes in the employment pattern appear to be leading to greater inequality in the distribution of incomes. One concern is that the high growth service sector has more low paid jobs than the declining manufacturing sector. In January 1986, the average weekly earnings in Ontario in the service sector was only 79% of average weekly manufacturing earnings (Ministry of Treasury and Economics, p. 15). It should be noted that there are great variations in job quality and in pay levels in both the service and manufacturing sectors. While rapid growth of the service sector has included the provision of well paid and low wage jobs, there is a need to ensure a greater range of employment opportunities for Metropolitan Toronto's labour force. Metropolitan Toronto should enable a broad range of employment activities and land uses to develop within the metropolitan area.

The decline in semi-skilled work and the increase in part-time and low paid service sector employment may result in a reduction in median income and the proportion of the population constituting the "middle class". This may require appropriate levels of government to address the issue of income distribution and the provision of employment benefits to those workers presently not receiving them. The potential for an increase in job displacement may also lead to lower incomes. Evidence indicates that displaced workers often experience a decline in their wages once they find new employment, and it may take them years to recover lost wages (Barry Bluestone, Winter 1984).

The changes in the employment pattern have potential to result in a lack of opportunity for upward mobility and increase the incidence of poverty. It appears that the incidence of poverty in Metropolitan Toronto is not decreasing and is shifting within area municipalities (Social Planning Council of Metropolitan Toronto, 1985, p. 9). The potential increase of social inequality may necessitate a greater provision of social services which are available in Metropolitan Toronto but not equally provided for by the surrounding regions.

In spite of the general economic recovery in Metropolitan Toronto, young people age 15 to 19 years still experienced an unemployment rate of 20.3% at the end of 1984 compared to 9.1% at the end of 1980 (Social Planning Council of Metropolitan Toronto, 1985, Table A-2). This may result in limited future employment opportunities which may require a continuation of the provision of special programs for this group by governments.

5.3 Women

For the most part, women remain in relatively low paying jobs. It is estimated that two-thirds of the employment growth of women in Ontario during the period 1971-1981 has been in sales, clerical and service jobs (Ontario Task Force on Employment and New Technology, Final Report, p. 72). While the service sector may be more able to meet the needs of women looking for flexible hours and part-time work, many of these jobs are poorly paid, offer few fringe benefits and offer little opportunities for advancement. Women comprise about 71% of part-time workers in Ontario (Ministry of Community and Social Services, 1986, p. 16). With the continuation of these trends the low income status of women will tend to be maintained. Automation of clerical work has the potential to impact females most significantly, possibly resulting in job displacement. The result may be an increase in poverty among women and increased demand for social services.

While the participation rate of women in the labour force has increased from 44% in 1975 to 54% in 1985, it is expected to increase at a slower pace in the future. The participation rate of men has remained relatively stable at around 77% (Woods Gordon, 1986, p. 8). As more women enter the labour force there

will be a need to provide more day care. A recent report identified a potential need for 90 000 day care spaces in Metropolitan Toronto.

5.4 Education

Due to rapid economic changes and the introduction of new technology, educational institutions play an important role in providing for the continued growth of cities. Metro Toronto is well suited to accommodate these changes due to its high level of educational facilities and institutions and the research and training they provide.

Most workers may be expected to require on the job training throughout their career as well as retraining as they undergo several career changes. This requires placing emphasis on education and retraining and better forecasting of skills needed to meet future employment opportunities. The Government of Ontario recently announced a strategy to provide $100 million a year over the next five years on skills development and training programs for Ontario workers. In order to assure Metropolitan Toronto's future economic strength and competitiveness, there is a need to ensure that its education institutions are well supported.

5.5 Housing

A number of trends are occurring affecting the housing sector. These include demographic factors such as the aging of the population, economic trends and changes in the employment pattern affecting housing affordability. The demand for new housing is largely being met by the regions surrounding Metropolitan Toronto. However, these regions lack the substantial supply of social housing that is available in Metro Toronto. It is possible that the adoption of new technologies will affect the productivity of residential development enabling the industry to improve cost-effectiveness and integrate new technologies in housing design and manufacturing (Canada Mortgage and Housing Corporation, May 1986). Due to the large number of variables involved, it is difficult to say with certainty what will happen with respect to housing in the future.

6.0 IMPLICATIONS FOR PLANNING AND LOCATIONAL POLICIES

A number of factors will affect the growth and location decision of firms in Metropolitan Toronto and will have implications for municipal planning policies. Figure 3 presents the proposed structure of Metropolitan Toronto in the Official Plan. It outlines in schematic form employment areas, centres, office parks and industrial areas in Metropolitan Toronto. The overall structure is unlikely to be affected by economic and technological trends. However, the pattern of development within the structure is susceptible to change over the longer term.

This section will examine the planning implications of recent trends with respect to Metropolitan Toronto's industrial and service sectors. It is difficult at this point to discuss these trends with greater certainty beyond merely pointing out their potential implications.

6.1 Industry

Most of the economic and technological factors and implications (i.e., the restructuring of the economy, globalization of industry and adoption of new manufacturing technologies) are beyond the control of municipal authorities. This indicates that if trends continue the capacity of municipal governments to influence locational decisions will be sharply reduced. Some factors and trends, however, have implications on planning policies which can be addressed by municipal governments. They include the growth of the service sector and new industrial uses, and the effect of new manufacturing techniques on space demands, building design, transportation accessibility and uses permitted by zoning by-laws and official plans.

(1) IMPACT OF ECONOMIC CHANGES

The restructuring of the Canadian economy is affecting the growth potential of Metropolitan Toronto's industrial sector. The mobility of standardized manufacturing industry to different places around the world means that routine manufacturing production is not tied to a Metropolitan Toronto location. Industries which are not competitive will likely decline.

A continuation of present economic trends seems to favour the development of specialized production and high quality manufacturing as well as a range of new industrial uses and high technology industry in Metropolitan Toronto.

(2) ADOPTION OF NEW TECHNOLOGY

Technological innovations will have far reaching planning and locational implications for manufacturing and other industries. An example of this is the adoption of new automated equipment and "just in time" (J.I.T.) inventory system which involves the delivery of parts and raw materials required for manufacturing operations just before they are needed. The use of such new technologies in industry may result in the following:

Space Demand

The adoption of new inventory systems may lead to a significant reduction in the warehouse space needed by both parts suppliers and manufacturing and assembly operations as stock storage is minimized. Better communication between supplier and user may result in direct shipping, perhaps avoiding the need for warehousing altogether in some industries.

We will learn through time whether new technology will lead to significant reductions in manufacturing space devoted to production operations. The automation and streamlining of material movement and production processes has the potential to reduce total plant space requirements. For example, automated machines which perform a number of functions eliminate the need for a multiplicity of machinery, thereby reducing floorspace needs.

The increasing importance of information and services in manufacturing is leading these activities to occupy a larger share of the building space. The trend to higher percentages of information-service functions in industrial-manufacturing operations will likely create a demand for more office and other accessory space.

These trends indicate that some manufacturing industries in Metropolitan Toronto adopting new technologies may experience a reduction in storage space.

FIGURE 3

- CENTRE
- REGIONAL OPEN SPACE
- INDUSTRIAL AREA
- * OFFICE PARKS
- RAPID TRANSIT (Existing and as committed in Amendment number 8)
- FUTURE RAPID TRANSIT (As proposed in Amendment 8)
- COMMUTER RAIL
- AIRPORT

URBAN STRUCTURE
(From Figure 3 of the Metropolitan Official Plan)

NOTE
This figure is schematic only and is not to be used to determine the extent or precise location of the elements depicted. The redesignation of an "industrial area" in an *Area Municipal* Official Plan shall not require an amendment to Figure 3

Building Design

The adoption of new technology could affect the design of new industrial buildings. For example, the J.I.T. system may lead to new plant design so as to accommodate the greater number of truck bays and deliveries. Automated material storage and retrieval systems which require storage space heights of up to 50 feet will affect the design of warehouse facilities. The trend continues to be towards single storey buildings and in some cases high ceiling heights as opposed to larger space facilities. At the same time, new material movement systems which transport goods to various floors may enable some production/assembly facilities to locate in multi-storey buildings.

It appears that industrial buildings will increasingly have to be able to accommodate highly complex telecommunications networks and computer systems. The computerization of manufacturing plants may tend to favour locating manufacturing operations in newer buildings and may render older industrial buildings obsolete for manufacturing. Older industrial buildings will require extensive change to accommodate the new production and telecommunications systems. When conversion is not economical or feasible, older industrial buildings may be demolished or rehabilitated through adaptive reuse for other activities.

The adoption of new technology will change some space requirements and affect production lines and loading facilities. Most of Metro Toronto's industrial areas are relatively new and are well suited to the technological trends. Metropolitan Toronto also has a significant number of older industrial areas containing older buildings. The viability of these buildings and areas could be impacted by their ability to adopt new technologies.

Location

Technological innovations are resulting in diverging trends with respect to the location of industries. The J.I.T. system appears to involve a significant increase in truck deliveries from suppliers to production plants, thus adding

to the number of truck movements on the transportation system. The shift to daily round-the-clock deliveries may lead production plants and suppliers to locate near each other so as to minimize delivery times. It is likely that this trend will increase the number of firms locating in the Toronto Region. For example, auto parts suppliers may continue to concentrate in the Toronto Region to be near the automobile production plants. The limiting factor affecting site location appears to be the cost and time of transportation.

Generally, most of Metro's industrial areas have good transportation accessibility. But the adoption of the J.I.T. system may place additional demands on the regional road system. Industries in Metropolitan Toronto located near residential areas or with poor transportation access which adopt new inventory control systems may relocate. Metro needs to maintain the provision of industrial areas next to key transportation access locations, (e.g., Pearson Airport and highway routes) and ensure adequate transportation accessibility for industry.

Computer and telecommunications networks enable manufacturing production to decentralize throughout the region or country and even to different countries. Telecommunications networks are functioning as delivery systems for some final products such as data, text and reports which have traditionally been distributed by other transportation systems. For example, the production of a newspaper which until recently was carried out from a central location, is now undertaken in several centres across the country with the text layout delivered via satellite to each centre for printing.

The growth of high-tech research and development activities appears to favour larger established urban regions. This is due in large part to:

(1) the high quality of life and the variety of amenities offered by the urban area (i.e., business services, cultural and entertainment facilities) and,

(2) the need for interaction with other technology intensive firms and centres of learning which undertake research and development activities.

These positive features exist in Metropolitan Toronto and the surrounding regional municipalities and indicate that the Toronto Region will likely continue to attract such firms.

The gradual shift away from standardized to more specialized production and information based activities leaves open the possibility for a resurgence in small labour intensive industry favouring a location in the Toronto Region in the longer term. The development of new manufacturing technologies may make it more attractive for companies currently using lower paid labour overseas to return to North America and compete successfully through automation.

Firms relying on a heavy labour component can be expected to continue to remain in Metropolitan Toronto due mainly to the availability of a large pool of skilled and semi-skilled workers and good transportation accessibility. However, as firms substitute capital for labour in their production process, their dependence on labour and concurrently on a Metropolitan Toronto location is correspondingly reduced. Consequently, they may have a greater propensity to move out of Metropolitan Toronto to the surrounding region or beyond. New small industries which are labour intensive or require a central city location may be attracted to locating in Metropolitan Toronto by the provision of small industrial or business space units which will serve an incubator function.

(3) GROWTH OF NEW INDUSTRIAL USES

The automation of manufacturing processes and the development of new employment activities such as data processing centres, retail-warehouse outlets and computer software development firms are leading to a blurring between manufacturing, retail and office activities. The development of activities involving new computer-based information services, information processing and the application of advanced technology to existing

manufacturing industries is resulting in the growth of new industrial activities. The growth of data centres where information is processed and superstores where goods are warehoused as well as sold to the public indicate the difficulty in differentiating manufacturing/warehouse from retail and office activities. Classification of these new land use activities is often difficult. Problems arise in defining these activities within traditional zoning by-laws. This requires a re-examination of the definition of "industry". Such a re-examination is currently underway by Metro and some of the area municipalities.

(4) GROWTH OF SERVICE SECTOR

Continued growth in service sector industries as well as services to manufacturing industries may increase pressures to accommodate these uses in industrial areas. Industrial areas which have good exposure and transportation accessibility will likely continue to be under considerable pressure from commercial uses. The demand for a greater variety of floorspace and building types will probably continue to change the traditional manufacturing nature of industrial areas in Metropolitan Toronto. In order to accommodate the projected growth of service industries in Metro there is a need to identify lands where such uses may be permitted.

(5) REGIONAL GROWTH

During the period 1980 to 1985, 44% of the growth in industrial space in the Toronto Region* has occurred in Metropolitan Toronto (Toronto Real Estate Board, Insight 1980, 1986). Metropolitan Toronto now accounts for 65% of the Toronto Region's industrial floorspace. There is reason for concern as to the impacts of regional growth on Metropolitan Toronto's competitiveness and its ability to attract industrial uses. The continuing growth and development of industrial lands which are peripheral to Metro raises

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* including Metropolitan Toronto, Brampton, Mississauga, Oakville, Aurora, Markham, Richmond Hill, Vaughan, Ajax and Pickering

questions as to the future development of industrial lands in Metropolitan Toronto. A forthcoming report on industry will examine the types of uses locating in industrial areas in Metropolitan Toronto.

Transportation accessibility and lower costs will most likely continue to serve as factors favouring suburban locations. Land costs and rental rates are generally lower in the suburban regions, although many industrial locations in Metropolitan Toronto are of comparable cost or less expensive. Furthermore, industrial properties in Metropolitan Toronto are taxed (realty and business tax) at about twice the rate per square foot of comparable properties in the surrounding regions even though water and sewer charges are lower. One explanation for this is that Metropolitan Toronto provides a higher level of municipal services than do the suburban regions. This large yearly tax differential will tend to encourage some new industries requiring large sites to locate beyond Metro's borders.

The Toronto Region's prominence as an industrial centre will likely be maintained. The varying industrial development patterns found in the twenty-five municipalities comprising the Toronto Region coupled with the concentration of services in the area, can be expected to help reinforce industrial and manufacturing activities in the Region.

Metro Toronto's relationship to the regional municipalities is much more important now than in the past and has implications on future industrial development in the metropolitan area. New industrial growth in Metropolitan Toronto will probably continue to centre on the establishment of a large number of new small firms. This should provide Metro with the flexibility needed to replace declining non-competitive activities. At the same time, expansion of existing firms as well as a smaller number of new larger firms will also contribute to employment growth.

6.2 Service Sector

6.2.1 Office Functions

Technological changes and economic factors are affecting the locational decision-making of firms. These trends and their planning implications are discussed below as they relate to office functions.

(1) GROWTH IN OFFICE EMPLOYMENT

The discussion on technological and economic trends highlighted the movement towards a service and information economy. As part of this shift, office work, defined "as any place where information handling is the main activity", is becoming more predominant (U.S. Congress, Office of Technology Assessment, 1985, p. 6).

While office employment is growing it is not yet clear what effect increased office automation will have on the level of employment. In the future it is likely that computers will become as common as the telephone or typewriter. While computers will result in improved productivity, they are likely to decrease the need for additional labour by reducing the need for primary and secondary data entry, substituting labour with capital and eliminating intermediate steps in the transfer of information. Thus, the rate of growth of office employment is very likely to be slower in the long term future than in the past. The report by the United States Office of Technology Assessment predicts that the most probable outcome is a slowing down in the growth of office jobs, especially in clerical/support occupations, and possibly even an absolute reduction in the number of jobs in offices.

Furthermore, the Ontario Task Force on Employment and New Technology projects that over the next decade, employment in a number of key "industries" traditionally located in the Central Area office buildings, i.e., banks, trust companies, insurance and government activities, are expected to show much lower rates of growth than in the past. This will likely be offset by exceptionally high growth rates in services to business management which are not as centrally-oriented as those that are

decreasing.* A recent report indicates that the proposal by the federal government to exclude Toronto from the International Banking Centre designation could result in a loss of jobs in the banking sector in Metro Toronto with negative implications in the longer term.

(2) OFFICE SPACE

The growth in office space is continuing due to the growth in the office and service sectors as well as due to changes in the floor space per worker ratio and new technology requirements. It is expected that there will be continued growth in office space independent of employment growth.

New office communications technologies are affecting the location and distribution of work activity. The ability to transmit information across town or around the world is enabling the separation of office functions to dispersed locations. While in the future, offices will continue to locate in the Central Area and Centres, **the rate of growth of office space in dispersed suburban locations in Metropolitan Toronto and the Region may increase more rapidly as growth shifts to firms that are less dependent on centrality.** The impacts of these trends on Metropolitan office policies will be examined in subsequent reports.

(3) THE CENTRAL AREA

(i) Continued Pre-eminence

While a considerable amount of dispersal of office space has been occurring within Metropolitan Toronto, the Central Area has continued to be the pre-eminent centre of office functions. Planning District 1 (the Central Area, see Figure 4 on the next page) accounted for 64% of Metro's office space in 1971 and 60% in 1984 (M.T.P.D. Employment Projections, 1984, Tables 12 and 13). Between 1971 and 1984, 44.4% of the growth of the Toronto Region's office space took place in Planning District 1, 36.3% elsewhere in Metro and 19.3% in the rest of the Region (Ibid).

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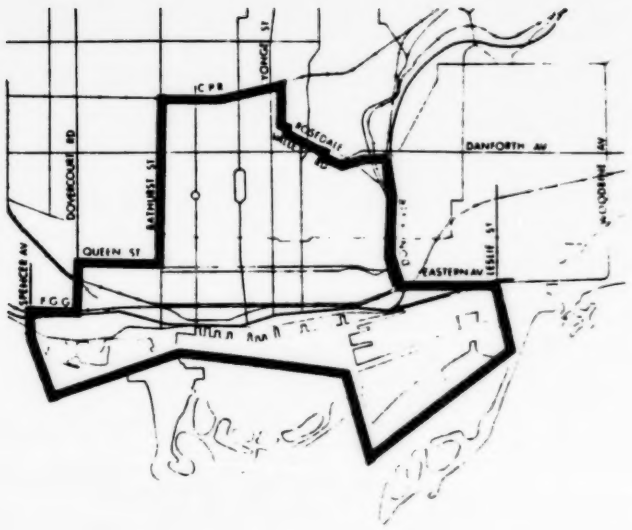
* Service to business management includes services such as computer services, advertising, employment agencies, accounting, architectural and engineering firms, lawyers and management consultants.



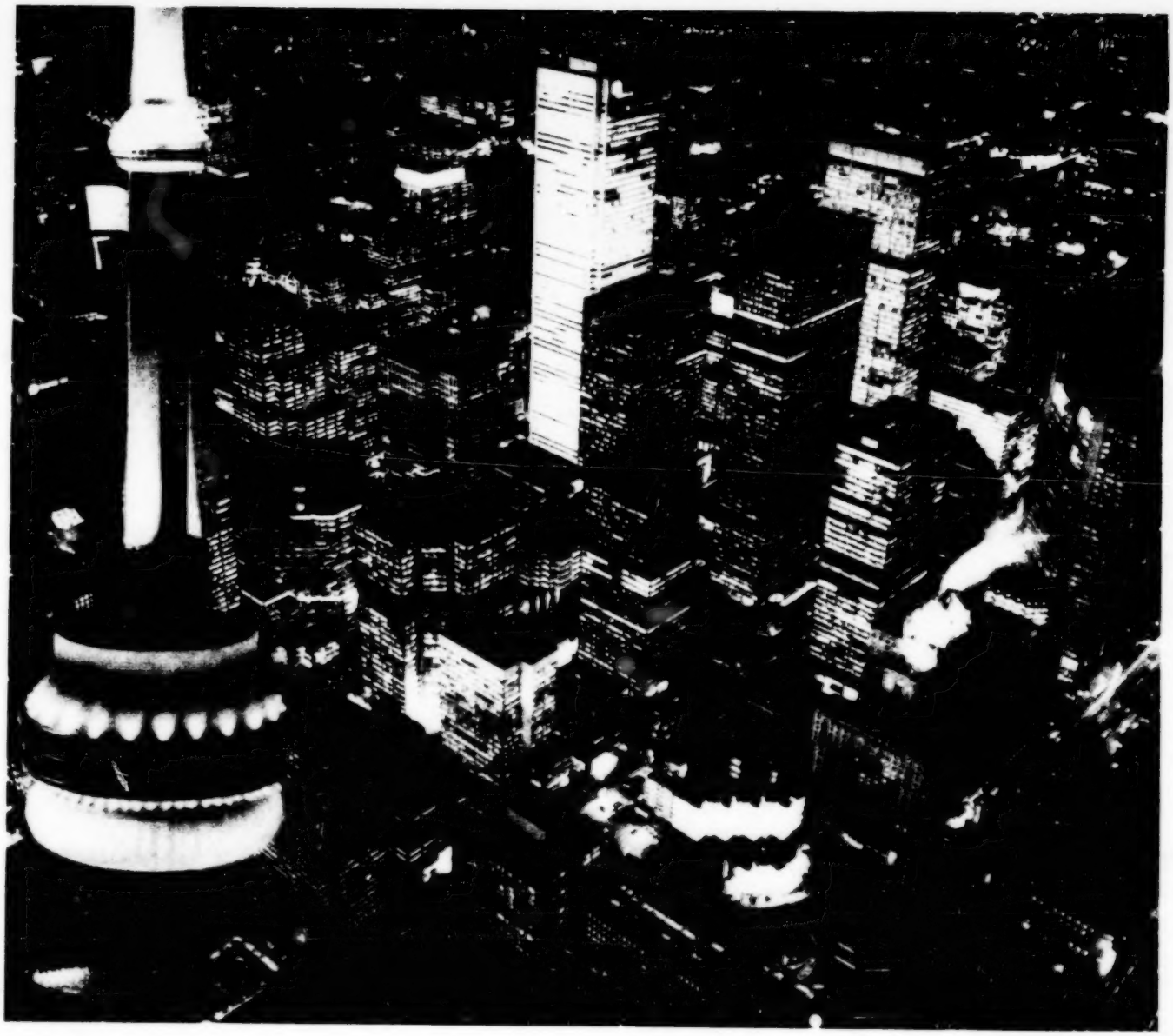
CENTRAL AREA
FIGURE 4

(From Figure 4 of the Metropolitan Official Plan)

(ii) Increasing Specialization

A review of the literature and of experience in other metropolitan areas suggests that the central area of cities is becoming increasingly oriented towards higher-order decision-making and executive jobs. Due to the high cost of locating in downtown Toronto, office functions which do not require an expensive central area location may move to less expensive locations. It is reported that the 1986 net rental rates of class A and B office space in the Toronto Central Business District ranges from $22 to $31 per square foot, whereas it is between $15 to $19 in the North York Centre and $10 to $15 in the Scarborough City Centre (Toronto Real Estate Board, p. 11). A recent trend in Metro Toronto is the move by many companies to split off their more routine, clerical functions (e.g., data processing) which lend themselves to automation, to suburban locations (Gad, 1985).

It appears that the downtown will increasingly serve those functions which require a highly central location and are willing to pay the high cost of office space. As Gad (1981) has pointed out, the Central Area



The Central Area is the financial and corporate centre of Canada.

will increasingly be the place of corporate headquarters, especially of large Canadian companies, the centre of Canada's financial and insurance activities and the place of large business service firms (e.g., large legal and accounting firms) or exclusively producer oriented firms such as advertising. In addition, it will continue to provide space for the larger range of the metropolitan region's goods and service industries.

What are the major reasons for locating in the Central Area? It appears that despite advances in communications technology, face-to-face contact is still a major determinant by senior and middle management for locating downtown. Even higher order informatics personnel want to be located at corporate head offices in order to maintain personal contact with other middle and high-level management (Hepworth, 1985). Access to financial and business networks and service and amenities such as restaurants and clubs and facilities for entertaining out of town guests are characteristics of the richer, downtown environment.

The Central Area will likely retain its pre-eminence. Losses in some office functions will probably be more than made up for by an increase in the floor space per worker and the trend to the downtown becoming more oriented to higher order decision-making functions.

(4) SUBURBAN GROWTH

(i) Growth Factors

Growth of suburban offices is occurring in the suburban Metropolitan Centres, Office Parks and industrial areas. It has now spread to other parts of the Region. While a number of large companies have relocated their head office to suburban centres and to locations in the fringe, the growth in suburban office space does not generally reflect movement of firms from the Central Area. The growth that is taking place in suburban locations involves new firms, expansion of existing offices and the movement to the suburbs of functions that do not need an expensive central area location.

Accessibility is a major factor affecting the location of metropolitan suburban offices. The growth of suburban offices have been favoured by good transportation access and improvements in public transportation facilities. There is a trend for offices not depending upon centrality to locate in proximity to the region's new housing developments, thereby facilitating accessibility. In addition, the relatively lower cost of land and lower rental rates in suburban areas are attractive features. Some companies seeking an office building with their corporate name on it are attracted to suburban locations. Many high order and specialized functions are also locating in suburban offices (as evidenced by the development of the Don Valley-Highway No. 404 corridor as a computer/high-technology area).

In a recent study, it was found that many business services have a propensity to locate in suburban areas. These include data processing consultants, chartered accountants, lawyers and engineering consultants (Gad, 1985). Sales offices also tend to open branch offices to be close to clients. Suburban firms are generally small to medium size and oriented to local consumers, regional as well as national markets.

Gad also found that foreign companies are more likely to select a suburban location than a Canadian firm. This may simply reflect the tendency for American firms to imitate the more advanced pattern of deconcentration that has occurred in U.S. cities. Such accelerated decentralization has been encouraged by two important factors which are **not** characteristic of Metropolitan Toronto, i.e., a declining central area environment and poor public transit. There is a need to stress these differences to prospective new businesses and highlight the advantages of locating in Metropolitan Toronto.

The Metropolitan Toronto Official Plan encourages the development of a multi-centred urban structure and growth of suburban employment opportunities. In this respect, there is a need to continually monitor the employment and locational trends in Metropolitan Toronto and the surrounding Region.

(ii) Deconcentration of Back Office Jobs

The computerization of routine functions is enabling them to be split off from other head office functions and removed to a suburban location where land is less expensive and the journey to work for employees living in the suburbs is less time consuming. Partial decentralization began in the 1960's with the movement of data centres to suburban locations (Gad, 1985, p. 344). By the end of 1981, the data centres of 3 major banks had moved out of the financial district to the suburbs (Bank of Commerce to North York; Bank of Montreal and Bank of Nova Scotia to Scarborough). Recent suburban growth is involving a large clerical workforce.

(iii) Suburban Work Environment

As office growth, particularly routine automated functions, shifts to suburban locations, more attention will be needed towards improving the work environment in Centres, Office Parks and other dispersed office developments. Improvements include better public transportation, restaurant and shopping facilities and workplace day care. From a planning perspective the need for more amenities in terms of the numbers of people directly affected is just as great in non-centre locations. Due to the trend to dispersed office development, it will be necessary to examine servicing needs for these employment areas to ensure that demands for public investment can be accommodated.

(5) CHANGES IN FLOOR SPACE PER WORKER (F.S.W.)

In recent years the F.S.W. ratio for office workers has grown considerably. Whereas a survey in 1970 indicated that the gross F.S.W. ratio in the Central Core was 231 square feet per employee, in 1980 the F.S.W. ratio had risen to 269 square feet (City of Toronto Planning and Development Department, 1981, p. 26) and in 1986 had increased to about 300 square feet per employee in the Central Area. The increasing tendency for higher order functions to predominate in the Central Area and the adoption of office automation

equipment are likely to increase the F.S.W. ratio in the Central Area. Long term regular monitoring of the F.S.W. ratio is necessary, particularly in relation to Central Area employment projections and the related provision of transportation facilities.

(6) ADOPTION OF NEW TECHNOLOGY

As office automation and the application of computers to information processing and manipulation increases, this will result in a growing importance of computer linkages in offices. The increasing automation of the office place and use of local area networks (which enable the interconnection of office equipment within a building) is highlighting the importance of offices being capable of accommodating increased communications networks. Many buildings in the Central Area were built before the widespread use of computers and some will have to be retrofitted to meet the demands of present and future tenants for increased communications systems. There is a need to study the extent to which office buildings in Metropolitan Toronto are able to facilitate the use of new computer and telecommunications technologies.

A growing trend will be the construction of "smart" office buildings in Metropolitan Toronto. Definitions of what makes a building "smart" vary, but one comprehensive definition includes the following three intelligence levels: integration of computer controlled building services, shared telecommunications systems, and interconnecting data communications networks between offices and the outside world (Micot, 1986). Based on this complete definition, it is estimated that there are currently only twelve truly "smart" buildings in the United States but hundreds more which offer the lowest level of "smart" service (Micot, p. 12).

In the future it is likely that a greater number of office buildings will be constructed in Metropolitan Toronto which will offer all three levels of intelligence. This has potential impacts in the longer term future, both on existing office space and its location. Buildings which do not have the infrastructure to handle the demands associated with the more intensive use of computers and communications may experience higher vacancy rates and lower rents.

In response to the increase in demand for office automation and for better telecommunications linkages, companies are seeking to connect to satellite dishes for satellite communications. In addition, a fibre optic network is being developed to serve parts of Metropolitan Toronto and connecting the community with other metropolitan centres in Canada. A number of authors indicate that "communications systems are critical to the success and growth of information, finance, and service industries because they are the principal means of getting the "product" of these industries to market" (Bamberger et al, p. 22). It appears that cities which facilitate the development of a telecommunications infrastructure may have a critical edge in attracting information intensive employment activities. **Expansion of the communications infrastructure network in Metro Toronto will likely become more important in the future in order to facilitate the location of future office development in Metro and should be planned for now through municipal infrastructure design.**

(7) INCREASE IN HOME-BASED WORK

While there has not yet been a noticeable trend towards home-based office work in Metropolitan Toronto, the widespread application of computers does increase the potential for work to be done at home when combined with communications technology, e.g., word processing, data entry, analytical studies, computer programming or consulting. In the United States where this shift is evident, a 1984 publication reported that 10 million businesses listed a home address as the place of business (Wolfgram, 1984, p. 31). The trend towards self-employment and the use of computers will likely cause this to increase. Computers also raise the more controversial possibility of farming out clerical work to women at home. Zoning by-laws can often restrict the development of such home-based businesses. **These trends indicate that there may be a future demand to review zoning by-laws to determine employment uses which are compatible in residential units so as to control any negative impacts on the neighbourhood.**

6.2.2 Government, Institutional and Non-Profit Services

Growth of government and institutional services (education, health and non-profit services) depends to a large degree on government policy and funding. Although terms of reference for the $1 billion provincial government technology fund have not yet been announced, allocations from the fund for research and development activities and new facilities may enable the growth of university and health service facilities.

(1) Government

Recent projections by the Ontario Task Force on Employment and New Technology indicate little or no employment growth in this sector over the next decade. There appears to be a general policy to restrain growth in the public service. At this time, it is not known what will be the effect of increased automation and productivity of government office work.

Political considerations as well as service requirements and market forces are factors in the location decisions of federal and provincial government offices. The potential for government ministries and departments to change locations is a function of these factors. Government office functions which do not require interface for decision making or a central location may have a propensity to locate in suburban areas or move out of Metropolitan Toronto as part of the shift of back office functions. Some government offices which have daily contact with the public will likely locate new facilities in suburban centres near areas of population growth. Government offices have been used to assist the growth of suburban centres in Metro and this may be expected to continue. The federal government has offices scattered throughout the metropolitan area as well as significant concentrations in Centres.

Four of the municipal government offices in Metropolitan Toronto (Toronto, North York, Scarborough and Metro) are associated with major office concentrations. The possibility exists for the Etobicoke municipal offices to relocate in the Islington/Kipling Centre in the future. No other major developments have been reported.

The bulk of provincial government offices in Metropolitan Toronto are concentrated in the Central Area of Toronto. While some decentralization has taken place, there is a likelihood that additional offices will be shifted to the metropolitan suburban Centres or even out of Metropolitan Toronto. Both the provincial and federal governments are undertaking initiatives to review their land holdings in Metropolitan Toronto. In the future, redevelopment of some underutilized government lands may occur.

(2) Health and Social Services

Both the Ontario Task Force on Employment and New Technology and the Metropolitan Toronto Planning Department project significant growth of employment in health services over the next decade and possibly through to the year 2011. The increase in demand for health and social services will continue as the number of elderly people grows and life expectancy increases. This will also change the demand for different types of services, for example, homes for the aged, day care and community centres for the elderly, and hospital facilities. In addition, the trend to a bipolarization of incomes and increase in part-time work may result in an increase in the need for social and health services.

The development of new health and social service facilities may be expected to locate in the outlying suburban region where large population growth is taking place. **However, the Central Area of Toronto will likely continue to be the principal medical research and specialized medical facility centre due to the concentration of resources currently there.** An important influence on hospital location is the close link of hospitals to universities and colleges where medicine and health care are taught. This will tend to inhibit the dispersal of major health services out of Metropolitan Toronto to the fringe. In addition, a number of companies engaged in medical research have located around the downtown Toronto hospital concentration.

Metropolitan Toronto has a well developed community based hospital system. The growth in health care services can be expected to have an impact on this regional hospital system. It may also result in the growth of other service industries which interact with the health sector.

At the same time, however, demand for health and social services may be affected by a change in the delivery of services. Technological devices and systems can assist in the provision of health and social services at home rather than in institutional facilities. Consequently, an increasing level of services may be delivered away from an institutional setting.

(3) Education

Education services are not projected to undergo any growth in employment and little growth in enrollment over the next two decades. Limited expansion of educational facilities (e.g., universities and colleges) will likely take place. The need for educational services at various types of institutions as well as in non-traditional settings, for example, at the workplace, will be affected as an increasing proportion of the workforce find it necessary to undergo retraining. The level of expansion of educational facilities (colleges and universities) are tied closely to provincial government funding. In addition, increasing financial support by private corporations to institutions of higher education may either stimulate the growth of facilities or hasten the completion of current expansion plans.

The Government of Ontario recently announced a $500 million training strategy comprising skills development and training programs for Ontario workers and companies. Universities and colleges involved in research and development should be recognized for their ability to attract high-technology research and development firms to the Toronto Region. They not only produce scientists, engineers and other professionals, but are also important in providing the necessary training and retraining of the labour force for the restructuring taking place in our economy. It is necessary to ensure that Metropolitan Toronto's educational institutions are well supported.

(4) Non-Profit Services

Community, health and social service non-profit agencies are experiencing a significant increase in demand for their services. Structural employment and economic changes in the future can be expected to lead to a continuation of this trend.

6.2.3 Retail

The retail sector is comprised of both retail shopping and services. Retail services include repairing and servicing of consumer goods, personal services (such as restaurant, beauty salon and funeral home services), equipment sales and rental services.

Whereas in the past the retail sector was a key source of new employment, projections by the Ontario Task Force on Employment and New Technology and this Department indicate the retail sector will account for a significant but smaller share in overall employment growth over the next decade. Growth of the service sector has included large employment gains in retail/personal services. The food and beverage sector is expected to undergo major growth, possibly through to the year 2011. This indicates the likelihood of increased development of restaurant/eatery facilities. Other personal services are not expected to experience any growth in employment over the next decade (Ontario Task Force on Employment and New Technology, Final Report, p. 147).

It appears that a greater proportion of retail employment will be comprised of part-time jobs. Layoffs in the retail industry and the adoption of labour saving measures are resulting in a decline in full-time employment. The latter includes the introduction of new technology at point of sale using optical scanning and electronic check out systems and computerized inventory, warehouse and stock handling control systems. While continued introduction of technological innovations may result in a further decline in full time and total retail employment, greater concerns about quality of service may lead retailers to increase sales staff although this would likely be in part-time jobs.

Recent trends in retailing indicate the following developments:

<u>Specialty and Superstores</u>

The construction of retail/warehouse outlets and superstores specializing in "off-price" drug, home improvement, and supermarket goods could continue to create dislocation in the retail industry. The closure of large neighbourhood food stores has implications on residential neighbourhoods. Free-standing superstores require large sites with good transportation accessibility. These are not readily

available in commercial areas. Therefore, pressures may continue to locate superstore facilities in industrial areas. It is expected that because of the large site and good transportation requirements, development of superstores will tend to favour suburban locations next to good transportation routes.

Shopping Centres

Real estate analysts indicate that the regional shopping centre market appears to be near the saturation point (Royal LePage, p. 14). New growth in regional shopping centres is likely to occur in the suburban Region, while no new development outside of centres is foreseen in Metropolitan Toronto. Existing regional shopping centres can be expected to expand to improve their tenant mix. Older, unprofitable and underutilized shopping centres tend to be recycled and redeveloped.

Retail Space

The Toronto Real Estate Board notes that due to increasing costs, retail shops appear to be getting smaller (p. 13). This is being achieved through more efficient space allocation, innovative shelving, smaller space for change rooms and centralized warehousing. These changes are enabling retailers to operate out of smaller units. In addition, new office developments can be expected to include a retail component.

Strip Retailing

Table 19 indicates that although strip retailing is the largest type of retail activity, it has decreased its share of total retail space in Metropolitan Toronto with a concommitant rise in malls and individual outlets. Strip retailing represents a significant proportion of total retail space in the older municipalities in Metropolitan Toronto and only a minor percentage in the newer municipalities. In Scarborough, North York and Etobicoke strip retail represents only 11% to 28% of total retail space whereas in East York, York and Toronto it comprises from 47% to 80% of retail floorspace (M.T.P.D., Retailing in Regional Municipalities, 1983, p. 3.17).

Table 19:

DISTRIBUTION OF RETAILING ACTIVITY BY TYPE IN METROPOLITAN TORONTO

	1971	1976	1983
Strip Retail	59.2%	53.3%	49.5%
Shopping Centre	39.8%	40.5%	40.5%
Mall	1.0%	6.2%	8.6%
Individual Outlet			1.4%

Source: M.T.P.D. Retailing in Regional Municipalities, 1983, p. 3.3

Notwithstanding the growth of malls, retail analysts indicate that generally, retail strips in Metro Toronto are flourishing and the rejuvenation of neighbourhood strip retailing is expected to continue (Toronto Real Estate Board, Royal LePage). Demographic changes in some areas will probably result in considerable changes in shopping patterns. Small specialty retailers will continue to locate in middle to high income residential retail strips. A general upgrading of sites is expected. Retail strips and redundant bank, supermarket and gas station sites may offer opportunities for redevelopment possibly to higher yielding uses such as residential, commercial or upgraded retail activities. Parking and traffic conditions along some prime strips may worsen with the influx of specialty shops attracting shoppers from outside the neighbourhood. This may lead to the need to address parking facility requirements.

Locational Trends

Retail activities need to locate close to the population and employment activities they serve. Retail shopping and services are important amenities to other employment activities and their employees and may help attract these activities to specific locations. Consequently, there is a need to ensure the provision of a variety of retail amenities in the vicinity of significant employment concentrations such as Centres, Office Parks and Industrial Areas. Each of these account for a significant level of employment in Metropolitan

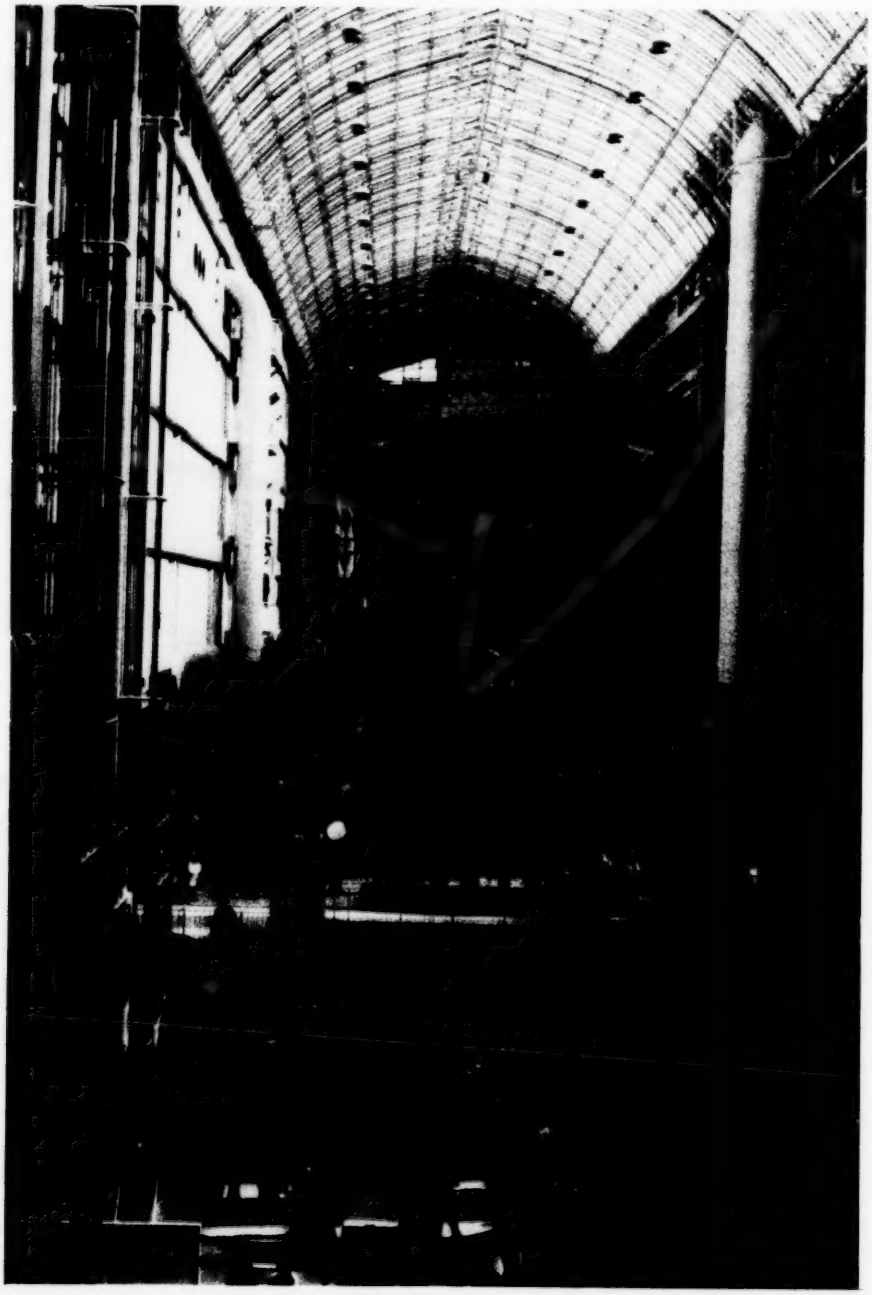
Toronto. The development of retail activities which serve these employment areas should be accommodated.

During the period 1976-1983, 72% of new retail floorspace in Metropolitan Toronto located in the City of Toronto. The City has increased its share of retail floorspace in Metropolitan Toronto from 45% in 1976 to 51% in 1983 (M.T.P.D., Retailing in Regional Municipalities, p. 3.17). Much of this growth is accounted for by the development of retail malls as part of office projects and the Toronto Eaton Centre. The City of Toronto will likely continue to be the retail centre of Metropolitan Toronto as new office projects, the railway lands and the waterfront area are developed and also due to the growth of tourism. It is possible that new office buildings in the downtown area may contain a smaller retail component due to higher costs and restricted peak shopping hours. Retail activities which also serve a residential market as well as the tourist sector will likely not be affected. On the other hand the growth in office development in the area municipalities will tend to involve a growth in the retail component.

Although the bulk of the Toronto Region's retail space is located in Metropolitan Toronto, this is rapidly changing. During the period 1976 to 1983 half of all new retail space built in the Toronto Region located in the surrounding regions. Whereas in 1976, 30% of the Region's retail space was located outside Metropolitan Toronto, by 1983 this increased to 36%. (M.T.P.D. Retailing in Regional Municipalities, Figure 2). There is a trend for the majority of the Region's retail development to take place where large population growth is occurring, i.e., outside of Metropolitan Toronto. This will likely have implications on the Metropolitan Toronto market and retail facilities. Inter-regional retail competition may become an issue in the future.

Shopping by telephone and television is an innovation which has had little effect on the retail sector thus far. It does have the potential of reducing retail employment and enabling the retail facility to locate and operate out of a warehouse facility. It is too early to predict the future potential of this retail concept and any possible impacts.

A thriving retail strip in Toronto.



The Eaton Centre is a major Metropolitan tourist attraction.

6.2.4 Recreation and Tourism Services

As a national diversified centre of advanced services, Metropolitan Toronto serves as a focus for a range of recreational, entertainment and tourist activities. These include arts, recreation, restaurants, sports, conventions, shopping and other related services. The provision of a package of cultural recreational and tourist services in Metropolitan Toronto can give the municipality comparative advantage in attracting other industries by creating an environment where people want to locate.

(1) Tourism

Tourism is a major industry and a vital contributor to the economy. It has been reported that by the end of the century, tourism is expected to be the world's largest service industry. Tourism is Canada's fifth largest earner of foreign exchange and the third largest export industry in Ontario (Camp Associates, 1985, p. 34). Metropolitan Toronto is the major recipient of tourism demand in Canada, accounting for 12% or $2 billion of Canada's tourism revenue. In 1985 nearly 17 million people visited Metropolitan Toronto, up from an estimated 16 million visitors in 1982. About 10% of employment in Metropolitan Toronto is said to be supported by tourism expenditures.

In view of the labour intensive nature of the tourism industry, its multiplier effect on the rest of the economy, and projections for continued growth of the tourism industry there is a need to recognize the potential of tourism as a source of economic growth and employment. The promotion of Metropolitan Toronto as a tourist centre has the potential to stimulate the local economy far beyond what has been realized to date.

The Economic Development Division of the Chairman's Office of Metropolitan Toronto is involved in a variety of tourism initiatives, including the promotion and development of tourism for Metropolitan Toronto. It is important that we continue to support the development of the tourism potential of some development projects and metropolitan features, for example, in the Central Area the new dome stadium, Royal Ontario

Museum, Art Gallery of Ontario, Toronto Eaton Centre, Metropolitan Toronto Convention Centre and waterfront recreational facilities; in the rest of the municipality the Metro Zoo, Ontario Science Centre and Metropolitan parks.

It is recognized that the Central Area will continue to be the focus of tourism, arts and entertainment in the Region. In encouraging the growth of tourism throughout Metropolitan Toronto, however, transportation accessibility to the facilities will need to be addressed. A continuation of the establishment of distinctive retail, entertainment and dining areas offers opportunities for growth of tourism. This includes the provision of tourist facilities in shopping malls and the better utilization and upgrading of existing tourist facilities (i.e., along the waterfront and the C.N.E.). Continued growth of Metropolitan Centres can be combined with hotel and other tourist facilities.

One important aspect of supporting the tourist economy that is generally paid little attention in North American cities is civic design. Public efforts at beautification of public spaces in European cities has netted very favourable results to their economies. The public environment should be recognized as an economic support as well as an environmental asset. Consequently, civic design should become a basic consideration when undertaking the development of public projects.

The trend to greater segmentation of the tourist market and the changing demographics in the North American population are resulting in changing tourist demands. This indicates a need to provide a greater variety of tourist services and facilities and the development of year round attractions.

In order to accommodate and assist the growth of the tourist industry it is important to ensure that for those component sectors such as the arts, affordable space is available. A greater interest in historical and cultural attractions indicates the significance of preserving our built heritage and encouraging the development of cultural facilities.

(2) Recreation

Various social and economic changes have implications on recreational services. They appear to be resulting in increased leisure time leading to growth in the demand for recreational services. These economic and social conditions also give rise to a demand for a greater variety of recreational services.

There is a need to accommodate increased and more varied recreational services in planning for the urban area. It would be useful to examine commercial/recreational/leisure trends so as to predict facility requirements and the need for services which reflect the socio-economic trends in Metropolitan Toronto. Consideration should be given as to the effect of an aging population on the location and accessibility to recreational facilities.

CONCLUSION

7.0

This report has examined the major technological changes and economic trends that are occurring and assessed their implications on the economic structure of Metropolitan Toronto. In this concluding section, the major planning implications as they relate to each economic sector of Metro are summarized. The economic and employment assumptions of the current Metropolitan Official Plan are reviewed and revised assumptions based on the trends outlined in this report are presented.

7.1 Planning Implications

Industrial

(1) The nature of industry in Metropolitan Toronto is changing as new industrial uses such as "high tech" research and development activities, computer services, retail warehouses and data processing centres are developing in addition to traditional industrial uses. There is a need to examine the definition of "industry" and permitted uses in industrial areas and identify lands where new kinds of economic activities may be permitted.

(2) The adoption of new technology can be expected to change the space demand within industrial development by increasing the need for office and other accessory space as a component of the industrial operation.

(3) With the adoption of the "Just-in-Time" delivery system in certain industries, accessibility between manufacturing companies and parts suppliers will become a significant locational factor. This system may place additional demands on the regional road system and may also decrease the need for warehouse space in some industries. The effect of the J.I.T. system on land development should be studied.

(4) The renovation and retrofitting of existing industrial buildings is likely to become more important as industrial buildings will increasingly have to accommodate complex telecommunications networks and computer systems. Obsolete buildings will likely undergo redevelopment.

(5) The demand for industrial space and land for routine standardized manufacturing uses will likely decline as firms using standard technologies increasingly shift production to lower-wage countries. Economic trends appear to favour the growth of specialized production and high quality manufacturing in Metropolitan Toronto. New industries requiring large sites can be expected to locate in the surrounding regions.

(6) There will be a need to ensure the provision of smaller incubator type industrial space and policies to support the development of innovative firms.

Office

(7) Continued high growth in business services will likely increase the demand for additional office space in Metropolitan Toronto.

(8) The Central Area can be expected to continue as the pre-eminent office centre within Metropolitan Toronto serving not only the Toronto Region but also the national economy. The Central Area will continue to grow, attracting head offices and other higher-order functions. The growth rate could, however, slow down as employment growth moves from trade and finance to business services which are not as tied to a central location.

(9) The office floor space per worker in the Central Area has been increasing and will likely continue to increase due to the increased concentration of higher-order functions in the Central Area and the trend to automation of the workplace.

(10) There is likely to be a continuation of the growing functional split between the Central Area and suburban office centres with the Central Area experiencing a concentration of higher order functions. Suburban office centres can be expected to attract business services, some head offices and specialized functions, as well as an increasing level of routine office jobs. This implies a need to improve transportation facilities, the work environment and provide increased amenities in suburban office concentrations.

(11) In the future there may be a demand to review zoning by-laws to determine which employment uses can be carried out from the home without adverse impact on the residential neighbourhood.

(12) Telecommunications networks are expected to contribute to Metropolitan Toronto's economic growth. The development of these networks as an element in the Metropolitan infrastructure should be ensured.

(13) An increasing number of office buildings may require retrofitting to meet the demands for advanced communications systems. There is a need to study the extent to which office buildings in Metropolitan Toronto are able to facilitate the use of new computer and telecommunications technologies.

Government Services

(14) Employment in government services is expected to remain stable or decline slightly. Government office functions which do not require a central city location or which have daily contact with the public may locate new facilities in suburban centres or move out of Metropolitan Toronto.

Health and Social Services

(15) The Central Area of Toronto will continue to be the principal medical research and hospital centre. Additional specialized medical facilities may be expected to locate there. General health and social service facilities can be expected to locate in the outlying suburban region where large population growth is occurring.

Retail

(16) Continued growth of the retailing of food and beverage services will probably result in an increase in such facilities.

(17) New growth in regional shopping centres is likely to occur in the surrounding regions and no new development outside of Centres is anticipated in Metropolitan Toronto.

(18) There will likely be continued demand by retail-warehouse outlets and superstores to locate mainly in suburban areas on large sites having good transportation accessibility. This could result in continued pressure on industrial areas.

(19) There is a need to ensure the provision of a variety of retail and service amenities in the vicinity of significant employment concentrations, especially sub-centres and Office Parks.

Recreation and Tourism

(20) There is a need to provide increased and varied recreational facilities for the local population and tourists.

(21) Planning should continue to support opportunities to maximize the growth of the Metropolitan tourist industry including arts, trade shows, cultural facilities and major sports facilities. Civic design policies should be developed to improve the urban environment and support tourism.

7.2 Economic and Employment Assumptions

The assumptions which form the basis of the current Metropolitan Plan are found in the existing Plan, the 1976 report Concept and Objectives and earlier drafts of the Plan.

Many of the assumptions on which the 1980 Plan were based appear to be still relevant to guide the future development of Metropolitan Toronto. However, with the acceleration of the process of change, some assumptions need to be modified and new ones to be considered. The economic and employment assumptions are reviewed below. They are grouped under the categories of economic growth, new technology and location of growth.

(1) Economic Growth

The Plan assumed that the Toronto Region's growth rate would be slower in the next quarter century than during the past thirty years. It was expected

that the shift in output and employment from goods producing to service sector industries would accelerate. Employment growth was forecast to concentrate in service industries with office employment accounting for the majority of the increase. Manufacturing employment was expected to undergo slower growth and represent a declining percentage of total employment. There was a need to preserve industrial land and industrial jobs primarily to maintain a diversity of employment opportunities.

These assumptions are still valid in guiding policy formulation for future economic growth. However, this report indicates that the manufacturing sector will likely experience a continued decline in employment but a continued demand for industrial acreage.

(2) New Technology

It was recognized that technological change would result in alterations to the employment and occupational patterns. Adoption of new technology would accelerate the process of economic decentralization to the suburbs and surrounding region.

While these assumptions remain valid, it is not possible at this time to indicate the extent of the impact of new technology on the distribution and location of employment activities and on the Metropolitan economy. Metro Toronto must continue to ensure that it is attractive to businesses. It appears that on the basis of existing trends, Metropolitan Toronto is well positioned to be an active participant in the technological age.

(3) Location of Growth

The Plan assumed a higher rate of economic growth in the surrounding region as compared to Metropolitan Toronto. It was recognized that Metropolitan Toronto's competitive advantage for some economic activities will decline and that in the future, new economic activities would have to be generated to replace the loss of older ones. Industries needing large sites would likely locate in the suburban fringe. Employment estimates based on the decentralization option, indicated a more even distribution of employment opportunities within Metropolitan Toronto. The Central Area

of Toronto would remain the pre-eminent centre for the Toronto Region continuing as the principal focus for office, retail, communications, cultural

The trends discussed in this report highlight the validity of these assumptions. They also indicate that the diverse nature of the metropolitan region's economy and its role in the national economy as an economic generator favour continued economic growth of the Region.

7.3 Revised Assumptions

Based on the review of technological changes and economic trends undertaken in this report and the assessment of their implications, the following suggest the revised assumptions which could form the basis of planning for the long term future of Metropolitan Toronto.

New Technology

- The adoption of new technology will likely serve as a powerful driving force of change. It will probably result in continued changes to the employment pattern leading to major adjustments in the metropolitan economy. It will also influence the distribution and location of employment activities in the Toronto Region.
- The technological changes taking place are likely to result in significant social impacts.

Economic Growth

- **The Toronto Region** forms an economic entity; the future economic growth of its five separate regions are interdependent.
- The Toronto Region should be able to maintain its strength as an economic generator of new ideas, new technologies and new economic activities.
- The surrounding regions will likely continue to attract an increasing proportion of economic and employment growth.

- It is expected that **Metropolitan Toronto** will experience continued though slower economic growth but will remain dominant in the Toronto Region.
- The manufacturing sector will probably continue to be a major source of wealth and output but will experience a continued decline in employment.
- It appears that we will have to look primarily to the service sector for the production of new jobs.
- Continued growth in Metro Toronto will tend to centre on service sector activities and new industrial uses.
- **The Central Area of Toronto** will likely continue to be the dominant focus of urban activity in the Region.

7.4 Adjusting to the Future

A number of planning implications have been identified, resulting from the economic and technological changes which are occurring. The social impacts resulting from these changes also have implications for Metropolitan planning activity. There is a need to respond to the social implications at the level of the metropolitan region through the development of special policies and programs which address the realities of social change.

The current pace of change creates a challenge for government to ensure that the economy will be able to accommodate the social and economic adjustments. The globalization of economic development means that Metropolitan Toronto will have to actively seek out economic opportunities. Governments at all levels will have to play an increasingly important role in order for society to adapt and adjust to the new realities. Emphasis needs to be placed on education and the provision of retraining to ensure a supply of workers whose skills match employment needs. It also requires the Metropolitan government to exercise a leadership role in helping guide the process of change and adjustment. In formulating an economic strategy for Metropolitan Toronto, the economic and technological changes and the new economic realities should be addressed.

Continued economic and employment growth in Metropolitan Toronto will likely reflect the region's function as a national diversified centre of advanced

services. The community, business and personal service sector (especially services to business management, accommodation and food, and health and welfare services) is expected to be the largest source of future growth. The tourism sector will probably also be a vital economic contributor. Current trends also favour growth in small, labour intensive, specialized production and high quality manufacturing as well as high technology industries including research and development activities. Overall, new growth in the Metropolitan area will likely continue to centre on the region's strength as an economic generator of new ideas and new economic activities. Planning for Metropolitan Toronto's future economic growth should accommodate these sectors while at the same time support other sectors of the Metropolitan economy.

Economic trends and technological innovations will continue to have significant impacts on our society. However, Metropolitan Toronto is well equipped to take advantage of future opportunities. The Metropolitan economy possesses a diversified economic base and a flexible industrial sector. Although the service sector is likely to dominate, manufacturing should remain an important contributor to the economy. Metro Toronto's well developed educational and research institutions can provide the necessary educational and retraining opportunities to ensure that the labour force is skilled in the new technologies.

Metropolitan Toronto also possesses an urban structure which should enable it to respond to the technological and economic changes. Its industrial areas are well suited to adopt new production technologies such as the "just-in-time" system, which will become increasingly important, although some modification of existing buildings may be required. The industrial areas are well located in relation to transportation facilities. The Metropolitan sub-centres are an important part of Metro's urban structure and are a suitable form for the new urban economy dominated by the service sector. In responding to the technological and economic changes, policies and programs should seek to enhance and retain these areas and support the overall urban structure of Metropolitan Toronto.

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INFORMATION TO THE READER

This report, as part of the Metropolitan Plan Review, serves as a common background document for three other studies on the subject of employment areas and activities. The subsequent reports on "centres", "office development" and "industrial areas" will address the changes and implications outlined in this report as they relate to Metropolitan policy. In addition, the report provides an economic rationale to the Plan Review studies on open space, urban environment, housing and transportation.

All members of the community are invited to comment on the issues presented in this report. It is hoped that individuals and organizations with particular expertise on matters raised here, will convey their conclusions and concerns from their own perspective. Such information will be considered and reported in the preparation of policy recommendations which will follow.

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